

BOGSC INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 838
 Injection pump
 Pump designation : PES6P100A320LS3306
 EP type number : 0 412 006 703
 Governor
 Governor design. : RQV350...1200PA1042K
 Governor no. : 0 421 815 320

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 15.9...16.1

100 s: (15.7...16.3)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.4)

Spread cm3 : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 500
 travel mm : 3.50...3.90

3rd speed rpm : 800
 travel mm : 6.20...6.60

4th speed rpm : 1250
 travel mm : 9.30...9.50

5th speed rpm : 1400
 travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

Del.quantity : 159.5...161.5
1000 : (157.5...163.5)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.60
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1435...1445
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack travel: 7.40
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 13.80...13.90
2nd speed rpm : 1200
Rack travel in m: 14.60...14.80
3rd speed rpm : 600
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 10.40...10.80
2nd pressure hPa : 300
Rack travel in m: 11.50...11.60
3rd pressure hPa : 660

A02

Rack travel in m: 13.50...13.90

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 160.0...164.0
1000 s: (158.0...166.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1200
Del.quantity cm³/ : 96.5...100.5
1000 s: (94.5...102.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 17.5...21.5
1000 s: (15.0...24.0)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1819913C91

Delivery-valve spring pre-tension =
6.00...6.10 mm.
Permissible alteration from 5.70...6.30
mm

Bow dimension:

Sliding-sleeve position = 37.0 mm
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery blocking at start of
delivery of cylinder no. 1.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 839
 Injection pump
 Pump designation : PES6P100A320LS3306
 EP type number : 0 412 006 703
 Governor
 Governor design. : RQV350...1200PA1042-1K
 Governor no. : 0 421 815 322

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kw : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 058

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 16.1...16.3

100 s: (15.9...16.5)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 500

travel mm : 3.50...3.90

3rd speed rpm : 800

travel mm : 6.20...6.60

4th speed rpm : 1250

travel mm : 9.30...9.50

5th speed rpm : 1400

travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1200
Del.quantity : 161.5...163.5
1000 : (159.5...165.5)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.30
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1430...1440
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack travel: 7.70
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 14.30...14.50
3rd speed rpm : 650
Rack travel in m: 13.40...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.30...14.50

Measurement
Speed 1/min : 1200

1st pressure hPa : -

A05

Rack travel in m: 10.30...10.70
2nd pressure hPa : 310
Rack travel in m: 11.20...11.30
3rd pressure hPa : 655
Rack travel in m: 13.00...13.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 156.5...160.5
1000 s: (154.5...162.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm³/ : 85.0...89.0
1000 s: (83.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks: : NAVISTAR #1819914C91

Delivery-valve spring pre-tension =
6.00...6.10 mm.
Permissible alteration from 5.70...6.30
mm

Bow dimension:

Sliding-sleeve position = 37.0 mm
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery blocking at start of
delivery of cylinder no. 1.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 845
 Injection pump
 Pump designation : PES6P100A320LS3309
 EP type number : 0 412 006 704
 Governor
 Governor design. : RQV350...1300PA1042-
 6K
 Governor no. : 0 421 815 320

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 142.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.60...2.00

2nd speed rpm : 500
 travel mm : 3.80...4.20

3rd speed rpm : 800
 travel mm : 5.80...6.20

4th speed rpm : 1300
 travel mm : 8.90...9.10

5th speed rpm : 1500
 travel mm : 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 8.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 136.5...138.5
1000 : (134.5...140.5)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.40
Speed rpm : 1340...1370
2nd rack travel in: 4.00
Speed rpm : 1500...1510
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack trave: 6.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.10...12.20
2nd speed rpm : 1300
Rack travel in m: 12.40...12.60
3rd speed rpm : 700
Rack travel in m: 11.40...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 1200

1st pressure hPa : -

A08

Rack travel in m: 9.50...9.90
2nd pressure hPa : 250
Rack travel in m: 10.30...10.40
3rd pressure hPa : 600
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 134.0...138.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1300
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1340...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks: : NAVISTAR #1819922C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery blocking at start of

delivery of cylinder no. 1.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 847
 Injection pump
 Pump designation : PES6P120A720RS3316
 EP type number : 0 412 026 761
 Governor
 Governor design. : RQV300...1200PA1045
 Governor no. : 0 421 814 043

Customer-spec. information
 Customer : IVECO-AIFO

Engine : 8361 SRM 37

1st version kW : 272.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 13.90...14.00
 Del. quantity cm³/ : 24.3...24.5
 100 s: (24.0...24.8)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 3.0...3.4
 Del. quantity cm³/ : 2.3...2.9
 100 s: (2.0...3.2)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1245
 travel mm : 7.60...7.80
 2nd speed rpm : 300
 travel mm : 0.70...0.90
 3rd speed rpm : 700
 travel mm : 3.20...3.80
 4th speed rpm : 1550
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1360
 Rack travel in mm : 11.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 900
 Del. quantity : 243.0...245.0
 1000 : (240.0...248.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 12.90
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1365...1395
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 57...65

Testing:
Speed rpm : 300
Minimum rack travel: 4.70
Speed rpm : 300
Rack travel in mm : 3.10...3.30
Rack travel in mm : 2.00
Speed rpm : 355...415

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 440
Rack travel in m: 12.60...12.70
3rd pressure hPa : 320
Rack travel in m: 9.90...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm³/ : 267.0...273.0
1000 s: (264.0...276.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1240...1250

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 065 700

Injection pump
 Pump designation : PES5P110A720/3LS3218
 -1

EP type number : 0 412 015 703

Governor
 Governor design. : RSV350...1100POA487-
 7

Governor no. : 0 421 833 314

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM449

1st version kW : 140.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00x1.50x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

A12

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 350.0
 Rack travel in mm : 6.3...6.7
 Del. quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.0)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1080
 Del. quantity : 135.0...137.0
 1000 : (132.5...139.5)
 Spread cm³ : 4.00
 1000 : (8.00)

RATED SPEED

1st version
 Control lever
 position degrees: 93...101

Testing:

1st rack travel in: 9.80
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.30...6.70
Rack travel in mm : 2.00
Speed rpm : 400...460

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 111.0...115.0
1000 s: (108.0...112.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 625
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 645
Rack travel in m: 12.10...12.20
3rd pressure hPa : 840
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 143.0...147.0
1000 s: (141.0...149.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 27.0...31.0
1000 s: (24.5...33.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47399

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 0 402 076 748
 Injection pump
 Pump designation : PES6P110A720RS3305
 EP type number : 0 412 016 740
 Governor
 Governor design. : RSV300...1100P1A555
 Governor no. : 0 421 833 379

Customer-spec. information
 Customer : LIEBHERR

Engine : D 926 TI

1st version kw : 210.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness : 8.00X2.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.40...15.50

Del. quantity cm³/ : 18.5...18.7

100 s: (18.2...18.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del. quantity : 185.0...187.0

1000 : (182.5...189.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.40

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.9
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.40...15.50
2nd speed rpm : 500
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 15.40...15.50

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.40...13.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 640
Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.40

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (141.0...169.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 0 402 076 748A
 Injection pump
 Pump designation : PES6P110A72ORS3305
 EP type number : 0 412 016 740
 Governor
 Governor design. : RSV300...1100P1A555
 Governor no. : 0 421 833 379

Cust. part no. : 9271058

Customer-spec. information
 Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x wall thickness
 x length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.40...15.50

Del.quantity cm³/ : 18.5...18.7

100 s: (18.2...18.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del.quantity : 185.0...187.0

1000 : (182.5...189.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.40
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.9
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.40...15.50
2nd speed rpm : 500
Rack travel in m: 15.40...15.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 15.40...15.50

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.40...13.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 640
Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version

A19

1mm rack travel less than
full load rack tr: 14.40
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (141.0...169.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 11.G1.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 752
 Injection pump
 Pump designation : PES6P110A720RS3144
 EP type number : 9 410 231 035
 Governor
 Governor design. : RSV400...1050POA513
 -2
 Governor no. : 0 421 833 339

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6619 A

1st version kW : 215.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 9 681 271 004

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 21.7...21.9
 100 s: (21.5...22.1)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 5.8...6.0
 Del.quantity cm³/ : 2.0...2.4
 100 s: (1.7...2.6)

Spread cm³ : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 900
 Del.quantity : 217.0...219.0
 1000 : (215.0...221.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Testing:
 1st rack travel in: 12.60
 Speed rpm : 1100...1110

2nd rack travel in: 4.00
Speed rpm : 1180...1190
3rd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1280
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.60...13.70
2nd speed rpm : 750
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.40...14.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 240
Rack travel in m: 12.10...12.50
3rd pressure hPa : 720
Rack travel in m: 14.00...14.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 750
Del.quantity cm³/ : 229.0...233.0
1000 s: (227.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE23749

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 076 753

Injection pump
 Pump designation : PES6P120A72DRS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 -13
 Governor no. : 0 421 833 403

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kw : 186.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 2.5...2.9

100 s: (2.3...3.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:
1st rack travel in: 11.20
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 14.00
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.20...12.30
2nd speed rpm : 650
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 590
Rack travel in m: 11.30...11.70
3rd pressure hPa : 850
Rack travel in m: 12.70...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 25.5...29.5
1000 s: (23.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks: : JOHN DEERE # RE50748

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 754
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 -14
 Governor no. : 0 421 833 405

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HFO30

1st version kw : 205.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 2.0...2.4

100 s: (1.8...2.6)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 168.0...170.0

1000 : (166.0...172.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1195
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.50...12.60
2nd speed rpm : 750
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 465
Rack travel in m: 11.10...11.20
3rd pressure hPa : 730
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 174.5...178.5
1000 s: (172.5...180.5)
Aneroid pressure h: -
Speed rpm : 800

A25

Del.quantity cm3/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 20.0...24.0
1000 s: (18.0...26.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47410

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTJ
 Edition : 11.2.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 436 042
 Injection pump
 Pump designation : PE6ZW150/120RS1007
 /11
 Governor
 Governor design. : RQUV300...1200ZWA50R
 Governor no. : 0 422 409 026

Customer-spec. information
 Customer : MTU

Engine : 331

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 40...45
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 443 022
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 027
 Outside diameter
 x Wall thickness
 x Length mm : 8,00x2,00x1500
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60
 : (2.45...2.65)
 Rack travel in mm : 12.00
 Firing order : 6-1-2-3-4-5

Phasing : 0-75-120-195-240-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 18.00
 Del. quantity cm³/ : 49.7...50.7
 100 s: (49.4...51.0)
 Spread cm³ : 1.5
 100 s: (2.2)
 2nd speed rpm : 600
 Rack travel in mm : 9.00
 Del. quantity cm³/ : 13.1...15.1
 100 s: (12.6...15.6)
 Spread cm³ : 1.6
 100 s: (2.4)
 3rd speed rpm : 300
 Rack travel in mm : 9.00
 Del. quantity cm³/ : 7.0...9.0
 100 s: (6.5...9.5)
 Spread cm³ : 1.0
 100 s: (1.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 82...88
 Speed rpm : 1200
 Rack travel in mm : 17.5...18.5

RATED SPEED

1st version
 Control lever
 position degrees: 82...88

Testing:
 1st rack travel in: 17.00
 Speed rpm : 1230...1240
 3rd rack travel in: 6.40...11.60
 Speed rpm : 1300
 4th rack travel in: 1420
 Speed rpm : 0.00...2.00

LOW IDLE 1

Control lever
 position degrees: 20.0...26.0
 Setting point w/out bumper spring
 Speed rpm : 300
 Rack travel in mm : 8.00

Testing:
 Speed rpm : 150
 Minimum rack travel: 15.20

Speed rpm : 400
Rack travel in mm : 2.80...4.30
Rack travel in mm : 3.80
Speed rpm : 380...420
Speed rpm : 570
Maximum rack trave: <0.01

LOW IDLE 2

Control lever
position degrees: 27...33

Testing:

Speed rpm : 250
Rack travel in mm : 12.2...14.6
Speed rpm : 375
Rack travel in mm : 6.00...7.20
Speed rpm : 600
Rack travel in mm : 0.80...2.10
Speed rpm : 730
Rack travel in mm : <0.01

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 17.00
Speed rpm : 1230...1240

Remarks:

Full-load delivery is set on engine
according to engine test report.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b3
 Edition : 18.12.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 640 830

Injection pump
 Pump designation : PE12P120A520LS7824-2
 EP type number : 0 412 620 816
 Governor
 Governor design. : RQV300...1150PA902-4
 Governor no. : 0 421 813 870

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 30.4...30.6
 100 s: (30.1...30.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.1...9.3
 Del. quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)

Spread cm³ : 0.8
 100 s: (1.2)

3rd speed rpm : 300
 Rack travel in mm : 7.20...7.40
 Del. quantity cm³/ : 5.2...6.0 *
 100 s: (-)

Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.60

2nd speed rpm : 450
 travel mm : 2.90...3.50

3rd speed rpm : 750
 travel mm : 5.60...6.00

4th speed rpm : 1150
 travel mm : 9.50...9.70

5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1270
Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 470...530

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 100
Rack travel in m: 9.40...9.50
3rd pressure hPa : 470
Rack travel in m: 12.20...12.60

START CUT-OUT

801

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.40...8.60
Del.quantity cm³/ : 125.0...200.0
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7153

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 e2
 Edition : 18.12.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 402 640 833
 Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA943-1
 Governor no. : 0 421 813 869

Customer-spec. information
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 14.90...15.00
 Del.quantity cm³/ : 33.7...33.9
 100 s : (33.4...34.2)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.0...9.2
 Del.quantity cm³/ : 14.9...15.1
 100 s : (14.6...15.4)
 Spread cm³ : 8.0
 100 s : (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...6.0 *
 100 s : (-)
 Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 300
 travel mm : 1.20...1.60
 2nd speed rpm : 450
 travel mm : 2.90...3.50
 3rd speed rpm : 750
 travel mm : 5.70...6.10
 4th speed rpm : 1150
 travel mm : 9.50...9.70
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1260
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del. quantity : 337.0...339.0
1000 : (334.0...342.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 120...128

Testing:

1st rack travel in: 13.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 100
Rack travel in m: 9.50...9.60
3rd pressure hPa : 470
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del. quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del. quantity cm³/ : - **
1000 s: (-)

2nd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del. quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del. quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7156

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 640 838
 Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039-1K
 Governor no. : 0 421 815 315

Customer-spec. information
 Customer : MAN

Engine : D2842LE401

1st version kW : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 Phasing : 180-225-240-285-300-
 345
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.80...13.90
 Del.quantity cm³/ : 30.4...30.6
 100 s : (30.1...30.9)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.9...10.1
 Del.quantity cm³/ : 16.9...17.1
 100 s : (16.6...17.4)
 Spread cm³ : -
 100 s : (-)
 3rd speed rpm : 300
 Rack travel in mm : 6.70...6.90
 Del.quantity cm³/ : 4.0...5.0 *
 100 s : (-)
 Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.00...2.20
 2nd speed rpm : 450
 travel mm : 4.00...4.40
 3rd speed rpm : 800
 travel mm : 6.70...7.10
 4th speed rpm : 1200
 travel mm : 10.30...10.50
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1280
Rack travel in mm : 10.80...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1300
Del. quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.80
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:
Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.80...13.90
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 900
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1150
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

B07

Measurement
Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 400
Rack travel in m: 10.30...10.40
3rd pressure hPa : 850
Rack travel in m: 12.40...12.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1300
Speed rpm : 700
Del. quantity cm³/ : 254.0...260.0
1000 s: (251.0...263.0)
Spread cm³ : 10.00
1000 s: (14.0)
Aneroid pressure h: 1300
Speed rpm : 900
Del. quantity cm³/ : 274.0...280.0
1000 s: (271.0...283.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 169.0...171.0
1000 s: (166.0...174.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del. quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : 0.00...7.00

Del. quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del. quantity cm³/ : 0...50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del. quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.70...6.90
Del. quantity cm³/ : 40.0...50.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7226

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 640 839
 Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039K
 Governor no. : 0 421 815 314

Customer-spec. information

Customer : MAN
 Engine : D2842LE402

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 14.80...14.90
 Del. quantity cm³/ : 33.7...33.9
 100 s : (33.4...34.2)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.9...10.1
 Del. quantity cm³/ : 16.9...17.1
 100 s : (16.6...17.4)
 Spread cm³ : 0.8
 100 s : (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 6.70...6.90
 Del. quantity cm³/ : 4.0...5.0 *
 100 s : (-)
 Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.00...2.20
 2nd speed rpm : 450
 travel mm : 4.00...4.40
 3rd speed rpm : 800
 travel mm : 6.70...7.10
 4th speed rpm : 1200
 travel mm : 10.30...10.50
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1265
Rack travel in mm : 11.70...15.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del. quantity : 337.0...339.0
1000 : (334.0...342.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.80
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 270...390

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.80...14.90
2nd speed rpm : 700
Rack travel in m: 13.50...13.70
3rd speed rpm : 900
Rack travel in m: 14.30...14.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1150
Pressure hPa : 1300
Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 400
Rack travel in m: 10.30...10.40
3rd pressure hPa : 850
Rack travel in m: 12.40...12.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 700
Del. quantity cm³/ : 287.0...293.0
1000 s: (284.0...296.0)
Spread cm³ : 10.00
1000 s: (14.0)
Aneroid pressure h: 1300
Speed rpm : 900
Del. quantity cm³/ : 307.0...313.0
1000 s: (304.0...316.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 169.0...171.0
1000 s: (166.0...174.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del. quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 18.2...21.0

HIGH IDLE

1st version

Speed rpm : 500

Rack travel in mm : 0.00...7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version
Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm³/ : 0.0...50.0
1000 s: (-)

3rd version
Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 40.0...50.0 *
1000 s: (-)

Remarks:
: MAN-NR. 3-7227

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 607
 Injection pump
 Pump designation : PE6P130A720RS7270
 EP type number : 0 412 636 821
 Governor
 Governor design. : RQV300...950PA946-4
 Governor no. : 0 421 814 026

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42P.032

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.50...14.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 11.30...11.40
 Del.quantity cm³/ : 21.1...21.3
 100 s : (20.8...21.6)
 Spread cm³ : 0.5
 100 s : (0.8)

2nd speed rpm : 275.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.9...2.5
 100 s : (1.6...2.8)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 8.40...8.60
 2nd speed rpm : 300
 travel mm : 1.10...1.30
 3rd speed rpm : 450
 travel mm : 2.80...3.40
 4th speed rpm : 650
 travel mm : 4.40...5.00
 5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1060
 Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aneroid pressure h: 1000
 Del.quantity : 211.0...213.0
 1000 : (208.0...216.0)

Spread cm3 : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 10.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
3rd rack travel in: 4.00
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 275...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 300
Rack travel in m: 11.00...11.10
3rd pressure hPa : 260
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 213.0...219.0
1000 s: (210.0...222.0)
Aneroid pressure h: -

Speed rpm : 550
Del.quantity cm3/ : 184.0...186.0
1000 s: (181.0...189.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.50...4.90
Del.quantity cm3/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 610
 Injection pump
 Pump designation : PE6P130A720RS7273
 EP type number : 0 412 636 823
 Governor
 Governor design. : RQV250...900PA881-2
 Governor no. : 0 421 814 035

Customer-spec. information
 Customer : PENTA

Engine : TAD 1630 P

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.40...12.50
 Del. quantity cm³/ : 38.3...38.6
 100 s: (38.0...39.0)
 Spread cm³ : 0.7
 100 s: (1.1)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.3...4.5
 Del. quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.7
 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.30
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 700
 travel mm : 4.50...5.10
 4th speed rpm : 925
 travel mm : 7.60...7.80
 5th speed rpm : 985
 travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 980
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1600
 Del. quantity : 383.5...386.5
 1000 : (380.0...390.0)

Spread cm³ : 7.00
1000 : (11.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 11.40
Speed rpm : 960...970
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1180
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1600
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 500
Rack travel in m: 9.10...9.20
3rd pressure hPa : 980
Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 249.5...252.5
1000 s: (246.0...256.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 960...970

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.30...4.50
Del. quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 7.00
1000 s: (11.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 03.C2.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 617
 Injection pump
 Pump designation : PE6P130A32ORS7282
 EP type number : 0 412 636 825
 Governor
 Governor design. : RQV300...900PA1059
 Governor no. : 0 421 814 049

Customer-spec. information
 Customer : PENTA

Engine : TAD 1230 P

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.00...11.10
 Del. quantity cm³/ : 32.1...32.4
 100 s: (31.8...32.8)
 Spread cm³ : 0.7
 100 s: (1.1)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.4...4.6
 Del. quantity cm³/ : 2.0...2.5
 100 s: (1.8...2.8)
 Spread cm³ : 0.7
 100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.50...1.90
 2nd speed rpm : 450
 travel mm : 3.20...3.80
 3rd speed rpm : 700
 travel mm : 5.20...5.80
 4th speed rpm : 915
 travel mm : 7.50...7.70
 5th speed rpm : 1000
 travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 980
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1800
 Del. quantity : 321.5...324.5
 1000 : (318.0...328.0)

Spread cm³ : 7.00
1000 : (11.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 10.00
Speed rpm : 910...920
2nd rack travel in: 4.00
Speed rpm : 985...1015
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 300...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1800
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 1100
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 210.5...213.5
1000 s: (207.0...217.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 910...920

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.40...4.60
Del. quantity cm³/ : 20.5...25.5
1000 s: (18.0...28.0)
Spread cm³ : 7.00
1000 s: (11.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 787
 Injection pump
 Pump designation : PE6P120A32QLS7858
 EP type number : 0 412 626 875
 Governor
 Governor design. : RQ300/1050PA1031-12
 Governor no. : 0 421 801 681

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.10...10.20
2nd pressure hPa : 300
Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm³/ : 160.0...164.0
1000 s: (157.0...167.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 788
 Injection pump
 Pump designation : PE6P120A320LS7858
 EP type number : 0 412 626 875
 Governor
 Governor design. : RQ300/1050PA1031-11
 Governor no. : 0 421 801 680

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.90

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.00...10.10
2nd pressure hPa : 350
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 789
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1031-10
 Governor no. : 0 421 801 679

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.40
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.20

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.30...10.40
2nd pressure hPa : 450
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm³/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 790
 Injection pump
 Pump designation : PE6P120A320LS7864
 EP type number : 0 412 626 879
 Governor
 Governor design. : RG1350...1050PA1052
 -2
 Governor no. : 0 421 814 044

Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA, Euro 1
 1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x wall thickness
 x length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 12.40...12.50
 Del. quantity cm³/ : 20.0...20.2
 100 s: (19.7...20.5)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.9...5.5
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.00...1.50
 2nd speed rpm : 453
 travel mm : 2.30...2.80
 3rd speed rpm : 770
 travel mm : 4.70...5.20
 4th speed rpm : 1108
 travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 10.10...12.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1000

Del.quantity : 200.0...202.0
1000 : (197.0...205.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:
Speed rpm : 250
Minimum rack travel: 8.70
Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 420...460

CONSTANT REGULATION

Speed rpm : 380...450

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.40...10.50
2nd pressure hPa : 450
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

B25

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 200.0...204.0
1000 s: (197.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 150.0...154.0 *
1000 s: (147.0...157.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 793
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1030-8
 Governor no. : 0 421 801 673

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.40
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.20

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.30...10.40
2nd pressure hPa : 450
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm³/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j
 Edition : 21.01.93
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 893
 Injection pump
 Pump designation : PE6P120A32ORS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQ250/1000PA936
 Governor no. : 0 421 801 507

Customer spec. information
 Customer : DAF

Engine : WS 268

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.3

Del. quantity cm³/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 217.0...219.0

1000 : (214.0...222.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 10.90

Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 1000
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 320
Rack travel in m: 11.10...11.20
3rd pressure hPa : 190
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 153.0...155.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

CO1

1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k6
 Edition : 21.C1.93
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 894
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQ250/1000PA936
 Governor no. : 0 421 801 507

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0

1000 : (242.0...250.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70

Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 250
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.70...14.80
2nd speed rpm : 1000
Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version

C03

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.90...7.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j3
 Edition : 18.12.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 895
 Injection pump
 Pump designation : PE6P120A32URS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information

Customer : DAF

Engine : WS 268

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 21.7...21.9

100 s : (21.4...22.2)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.9...5.3
 Del. quantity cm³/ : 2.3...2.9
 100 s : (2.0...3.2)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10
 2nd speed rpm : 400
 travel mm : 2.50...3.10
 3rd speed rpm : 700
 travel mm : 4.50...4.90
 4th speed rpm : 1045
 travel mm : 7.80...8.00
 5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000

Del.quantity : 217.0...219.0
1000 : (214.0...222.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 10.90
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 74...82

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 320
Rack travel in m: 11.10...11.20
3rd pressure hPa : 190
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 153.0...155.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k4
 Edition : 18.12.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 896
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.70...1.10

2nd speed rpm : 400

travel mm : 2.50...3.10

3rd speed rpm : 700

travel mm : 4.50...4.90

4th speed rpm : 1045

travel mm : 7.80...8.00

5th speed rpm : 1350

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0
1000 : (242.0...250.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 12.70
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 81...89

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 250
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 275...385

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.90...7.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L
 Edition : 18.12.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 912
 Injection pump
 Pump designation : PE6P120A320RS7218
 EP type number : 0 412 626 839
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 268 G
 1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 14.50...15.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 15.00...15.10
 Del.quantity cm³/ : 23.7...23.9
 100 s: (23.4...24.2)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000
 Del.quantity : 237.0...239.0
 1000 : (234.0...242.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 16.4

Testing:
1st rack travel in: 14.00
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del. quantity cm³/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L1
 Edition : 18.12.92
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 913
 Injection pump
 Pump designation : PE6P120A320RS7218
 EP type number : 0 412 626 839
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 268 G

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 14.50...15.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.80...8.00

2nd speed rpm : 250
 travel mm : 0.70...1.10

3rd speed rpm : 400
 travel mm : 2.50...3.10

4th speed rpm : 700
 travel mm : 4.50...4.90

5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 14.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 11.01.93
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 938
 Injection pump
 Pump designation : PE6P120A720RS71880
 EP type number : 0 412 626 846
 Governor
 Governor design. : RQ200/950PA745-3
 Governor no. : 0 421 807 579

Customer-spec. information
 Customer : SCANIA

Engine : D5C 11 21

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.70...12.80
 Del.quantity cm³/ : 21.9...22.1
 100 s : (21.6...22.4)
 Spread cm³ : 0.8
 100 s : (1.2)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.5...1.9
 100 s : (-)
 Spread cm³ : 0.4
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 219.0...221.0
 1000 : (216.0...224.0)
 Spread cm³ : 8.00
 1000 : (12.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.5
 Testing:
 1st rack travel in: 11.70
 Speed rpm : 995...1010
 2nd rack travel in: 4.00
 Speed rpm : 1085...1115

4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7

Testing:
Speed rpm : 125
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 330...370

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm³/ : 202.0...210.0
1000 s: (200.0...212.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...200.0
1000 s: (-)
Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 b 2
 Edition : 03.02.93
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 956
 Injection pump
 Pump designation : PE6P120A320LS7837-1
 EP type number : 0 412 626 858
 Governor
 Governor design. : RQV350...1050PA842-9
 Governor no. : 0 421 813 955

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.05)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 0.70...1.30

2nd speed rpm : 470
 travel mm : 2.60...3.10

3rd speed rpm : 940
 travel mm : 5.20...5.70

4th speed rpm : 1106
 travel mm : 6.70...7.20

5th speed rpm : 1263
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 13.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION
Speed rpm : 350...600

TORQUE CONTROL
Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 950
Rack travel in m: 14.80...15.00
4th speed rpm : 800
Rack travel in m: 15.10...15.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.50...14.70

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.60...9.80
2nd pressure hPa : 600

C15

Rack travel in m: 13.30...13.50
3rd pressure hPa : 1250
Rack travel in m: 14.60...14.80
4th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1800
Speed rpm : 1050
Del. quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del. quantity cm³/ : 247.0...251.0
1000 s: (244.0...254.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 13
 Edition : 18.12.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 963
 Injection pump
 Pump designation : PE6P120A320RS7218Y
 EP type number : 0 412 626 859
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.30...14.40
 Del. quantity cm³/ : 21.5...21.7
 100 s: (21.2...22.0)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000
 Del. quantity : 215.0...217.0
 1000 : (212.0...220.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 550
 Rack travel in mm : 16.4

Testing:

1st rack travel in: 13.30
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L4
 Edition : 18.12.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 964
 Injection pump
 Pump designation : PE6P120A32ORS7218Y
 EP type number : 0 412 626 859
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : ?

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.30...14.40
 Del. quantity cm³/ : 21.5...21.7
 100 s: (21.2...22.0)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.80...8.00
 2nd speed rpm : 250
 travel mm : 0.70...1.10
 3rd speed rpm : 400
 travel mm : 2.50...3.10
 4th speed rpm : 700
 travel mm : 4.50...4.90
 5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 77...85

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.40

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 420
Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600

Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Spread cm3 : 10.00
1000 s: (14.00)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 167.0...169.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 8
 Edition : 18.12.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 646 965

Injection pump
 Pump designation : PE6P120A320LS7834-1
 EP type number : 0 412 626 857
 Governor
 Governor design. : RQV350...1050PA866
 -19
 Governor no. : 0 421 813 979

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA, Euro 1

1st version kw : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.55)

Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 20.7...20.9
 100 s: (20.4...21.2)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...6.0
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 570
 travel mm : 3.30...3.80

3rd speed rpm : 900
 travel mm : 5.40...5.90

4th speed rpm : 1107
 travel mm : 7.80...8.30

5th speed rpm : 1204
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1125
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del. quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.40...6.00

CONSTANT REGULATION
Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1350
Rack travel in m: 14.40...14.60
4th pressure hPa : -
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del. quantity cm3/ : 225.0...228.0
1000 s: (222.0...231.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del. quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.00)
Aneroid pressure h: 1600
Speed rpm : 1050
Del. quantity cm3/ : 169.0...173.0 *
1000 s: (166.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 22.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 975
 Injection pump
 Pump designation : PE6P120A72ORS7188Y
 EP type number : 0 412 626 864
 Governor
 Governor design. : RQV200...950PA725-9
 Governor no. : 0 421 813 988

Customer-spec. information
 Customer : SCANIA

Engine : D5C 11 38

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.20...13.30
 Del.quantity cm³/ : 23.5...23.7
 100 s : (23.2...24.0)
 Spread cm³ : 0.8
 100 s : (1.2)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.4...2.0
 100 s : (-)
 Spread cm³ : 0.4
 100 s : (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.40...1.80
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 650
 travel mm : 5.20...5.80
 4th speed rpm : 995
 travel mm : 7.30...7.50
 5th speed rpm : 1180
 travel mm : 8.70...9.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 235.0...237.0
 1000 : (232.0...240.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 12.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 125
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm³/ : 216.0...224.0
1000 s: (214.0...226.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 152.0...154.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (-)
Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.02.93
 Replaces : 08.92
 Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1050PA1031
 Governor no. : 0 421 801 642

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.80
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.40

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 03.02.93
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 988
 Injection pump
 Pump designation : PE6P120A32ORS7230X
 EP type number : 0 412 626 868
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 295 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980
 Rack travel in mm : 13.90...14.00
 Del.quantity cm³/ : 25.8...26.0
 100 s: (25.5...26.3)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 5.8...6.2
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70
 2nd speed rpm : 285
 travel mm : 2.10...2.50
 3rd speed rpm : 685
 travel mm : 6.20...6.60
 4th speed rpm : 1030
 travel mm : 9.60...10.00
 5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 980
 Aneroid pressure h: 1500
 Del.quantity : 258.0...260.0
 1000 : (255.0...263.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.90
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 320...380

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.10...12.30
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 825
Rack travel in m: 13.30...13.50
4th speed rpm : 980
Rack travel in m: 14.20...14.40

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 730
Rack travel in m: 12.60...12.70
3rd pressure hPa : 300
Rack travel in m: 9.70...9.90

C27

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del. quantity cm³/ : 255.0...259.0
1000 s: (252.0...262.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 18.12.92
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 402 646 989
 Injection pump
 Pump designation : PE6P120A32ORS7230Y
 EP type number : 0 412 626 867
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 315 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980
 Rack travel in mm : 14.50...14.60
 Del.quantity cm³/ : 27.3...27.5
 100 s: (27.0...27.8)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.8...6.2
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70
 2nd speed rpm : 285
 travel mm : 2.10...2.50
 3rd speed rpm : 685
 travel mm : 6.20...6.60
 4th speed rpm : 1030
 travel mm : 9.60...10.00
 5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 980
 Aneroid pressure h: 1500
 Del.quantity : 273.0...275.0
 1000 : (270.0...278.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.50
Speed rpm : 1030...1040
2nd rack travel in: 1.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.90...13.10
2nd speed rpm : 600
Rack travel in m: 12.90...13.10
3rd speed rpm : 800
Rack travel in m: 13.90...14.10
4th speed rpm : 980
Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 760
Rack travel in m: 13.10...13.20
3rd pressure hPa : 350
Rack travel in m: 10.20...10.40

D01

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 600
Del. quantity cm³/ : 281.0...285.0
1000 s: (278.0...288.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 e
 Edition : 18.12.92
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 854
 Injection pump
 Pump designation : PE8P130A92C/5LS7822
 EP type number : 0 412 638 802
 Governor
 Governor design. : RQV300...950PA905
 Governor no. : 0 421 813 723

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.001

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 40...45
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 688 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

D02

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 11.40...11.50
 Del.quantity cm³/ : 22.1...22.3
 100 s: (21.8...22.6)
 Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 2.4...3.0
 100 s: (2.0...3.4)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.60...1.10
 2nd speed rpm : 350
 travel mm : 2.10...2.50
 3rd speed rpm : 600
 travel mm : 3.80...4.40
 4th speed rpm : 950
 travel mm : 7.20...7.40
 5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 900
 Del.quantity : 221.0...223.0
 1000 : (218.0...226.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 10.40
Speed rpm : 995...1005
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 380...480

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.60
2nd pressure hPa : 390
Rack travel in m: 10.90...11.00
3rd pressure hPa : 330
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 215.0...221.0
1000 s: (212.0...224.0)
Aneroid pressure h: -
Speed rpm : 500

D03

Del.quantity cm³/ : 161.0...163.0
1000 s: (158.0...166.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 995...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 235.0...265.0
1000 s: (231.0...269.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 899
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/950PA971-5
 Governor no. : 0 421 801 559

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 15.10...15.30
 Del.quantity cm³/ : 26.5...26.7
 100 s: (26.2...27.0)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 900
 Del.quantity : 265.0...267.0
 1000 : (262.0...270.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.3

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400

Pressure hPa : 900

Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 250

Rack travel in m: 10.00...10.20

2nd pressure hPa : 550

Rack travel in m: 12.80...12.90

3rd pressure hPa : 1100

Rack travel in m: 15.20...15.40

4th pressure hPa : 1300

Rack travel in m: 15.60...15.70

5th pressure hPa : -

Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000

Speed rpm : 950

Del.quantity cm³/ : 281.0...284.0

1000 s: (278.0...287.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.30

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 80.0...100.0

1000 s: (76.0...104.0)

Rack travel in mm : 9.10...9.50

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 902
 Injection pump
 Pump designation : PE8P1Z0A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/1050PA972-5
 Governor no. : 0 421 801 564

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm³/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del. quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400
1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550
Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050

Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 283.0...287.0
1000 s: (280.0...290.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.10...9.50

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 911
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...1050PA797
 -27
 Governor no. : 0 421 813 916

Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM442 LA
 1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow quantity min. 1/h: 100...120
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1
 Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 15.10...15.30
 Del. quantity cm³/ : 26.5...26.7
 100 s: (26.2...27.0)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 558
 travel mm : 4.30...4.80
 3rd speed rpm : 820
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.30...8.80
 5th speed rpm : 1183
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 900
Del. quantity : 265.0...267.0
1000 : (262.0...270.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550

D09

Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del. quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del. quantity cm3/ : 283.0...287.0
1000 s: (280.0...290.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f
 Edition : 21.01.93
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 912
 Injection pump
 Pump designation : PE8P130A920/5LS7841
 EP type number : 0 412 638 803
 Governor
 Governor design. : RQV300...950PA994K
 Governor no. : 0 421 815 275

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 11.5...12.5
 Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 21.4...21.6

100 s: (21.4...21.6)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.4

Del. quantity cm³/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm³ : 0.5

100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 9.60...9.80

2nd speed rpm : 300
 travel mm : 2.50...2.70

3rd speed rpm : 500
 travel mm : 4.10...4.70

4th speed rpm : 700
 travel mm : 5.90...6.50

5th speed rpm : 1250
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (214.0...216.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 170...290

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 10.50...10.60
2nd speed rpm : 950
Rack travel in m: 10.40...10.60
3rd speed rpm : 700
Rack travel in m: 10.40...10.70
4th speed rpm : 350
Rack travel in m: 10.00...10.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 950

D11

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 360
Rack travel in m: 9.70...9.80
3rd pressure hPa : 260
Rack travel in m: 8.10...8.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 214.0...220.0
1000 s: (214.0...220.0)
Speed rpm : 550
Del.quantity cm³/ : 145.0...155.0
1000 s: (142.0...158.0)
Spread cm³ : 10.00
1000 s: (14.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 139.0...141.0
1000 s: (139.0...141.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm³/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm³ : 5.00
1000 s: (9.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1

start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 917
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/1050PA993-3
 Governor no. : 0 421 801 601

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm³/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.40...16.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550
Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del. quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del. quantity cm³/ : 283.0...287.0
1000 s: (280.0...290.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 921
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQ300/950PA993-8
 Governor no. : 0 421 801 618

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm³/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del. quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400
1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550
Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del.quantity cm³/ : 281.0...284.0
1000 s: (278.0...287.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 15.30
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : G 402 648 928
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1030
 Governor no. : 0 421 801 640

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 23.3...23.5
 100 s: (23.0...23.8)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...13.00
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 930
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1031-2
 Governor no. : 0 421 801 645

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 932
 Injection pump
 Pump designation : PE8P120A320LS7849
 EP type number : 0 412 628 864
 Governor
 Governor design. : RQV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 TI

1st version kW : 360.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 15.00...15.10
 Del.quantity cm³/ : 26.2...26.4
 100 s: (25.9...26.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.5
 Del.quantity cm³/ : 1.8...2.4
 100 s: (1.5...2.7)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10
 2nd speed rpm : 405
 travel mm : 2.40...2.90
 3rd speed rpm : 550
 travel mm : 4.20...4.60
 4th speed rpm : 780
 travel mm : 6.30...6.90
 5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1185
 Rack travel in mm : 12.70...15.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500

Del. quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:

1st rack travel in: 14.00
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack travel: 8.50
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 430...490

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 1130
Rack travel in m: 14.10...14.20
3rd pressure hPa : 870
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 193.5...195.5
1000 s: (190.5...198.5)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 155.0...175.0
1000 s: (151.0...179.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.50
Del. quantity cm³/ : 18.0...24.0
1000 s: (15.0...27.0)
Spread cm³ : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 18.12.92
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 648 932A

Injection pump
 Pump designation : PE8P120A320LS7849
 EP type number : 0 412 628 864
 Governor
 Governor design. : RQV300...1050PA1034
 Governor no. : 0 421 813 993

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 T1

1st version kW : 360.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.00...15.10

Del. quantity cm³/ : 26.2...26.4
 100 s: (25.9...26.7)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.5
 Del. quantity cm³/ : 1.8...2.4
 100 s: (1.5...2.7)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10
 2nd speed rpm : 405
 travel mm : 2.40...2.90
 3rd speed rpm : 550
 travel mm : 4.20...4.60
 4th speed rpm : 780
 travel mm : 6.30...6.90
 5th speed rpm : 1118
 travel mm : 10.40...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1185
 Rack travel in mm : 12.70...15.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1500

Del. quantity : 262.0...264.0
1000 : (259.0...267.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:

1st rack travel in: 14.00
Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 250
Minimum rack travel: 8.50
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 430...490

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1500
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 1130
Rack travel in m: 14.10...14.20
3rd pressure hPa : 870
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm3/ : 193.5...195.5
1000 s: (190.5...198.5)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 155.0...175.0
1000 s: (151.0...179.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.50
Del. quantity cm3/ : 18.0...24.0
1000 s: (15.0...27.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 31.08.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 939
 Injection pump
 Pump designation : PE8P120A320LS7851
 EP type number : 0 412 628 865
 Governor
 Governor design. : RQV300...1050PA797
 -37
 Governor no. : 0 421 814 003

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 405.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.70...4.80
 : (4.65...4.85)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.40...14.60

Del. quantity cm³/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00

2nd speed rpm : 575
 travel mm : 4.30...4.80

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.10...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1300
Del.quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.90...8.10
2nd pressure hPa : 500
Rack travel in m: 9.20...9.40
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 600
Del.quantity cm3/ : 292.5...296.5
1000 s: (289.5...299.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...100.0
1000 s: (76.0...104.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 939
 Injection pump
 Pump designation : PE8P120A320LS7863-1
 EP type number : 0 412 628 876
 Governor
 Governor design. : RQV300...1050PA797
 -37
 Governor no. : 0 421 814 003

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 405.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.70...4.80
 : (4.65...4.85)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.40...14.60

Del. quantity cm³/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.50...1.00

2nd speed rpm : 575
 travel mm : 4.30...4.80

3rd speed rpm : 830
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.10...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1300
Del.quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.90...8.10
2nd pressure hPa : 500
Rack travel in m: 9.20...9.40
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 600
Del.quantity cm3/ : 292.5...296.5
1000 s: (289.5...299.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...100.0
1000 s: (76.0...104.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 940
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1032-4
 Governor no. : 0 421 801 661

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA
 1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1
 Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.30...13.40
 Del. quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1200
 Del. quantity : 228.0...230.0
 1000 : (225.0...233.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 600
Rack travel in m: 13.30...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 11.00...11.10
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -

EO2

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.40...10.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 11.92
 Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQV300...950PA1033-7
 Governor no. : 0 421 814 019

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 95...115

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del. quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.50

2nd speed rpm : 567
 travel mm : 4.40...5.00

3rd speed rpm : 780
 travel mm : 6.00...6.60

4th speed rpm : 1010
 travel mm : 8.50...8.70

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1050
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1200
Del. quantity : 228.0...230.0
1000 : (225.0...233.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control Lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 300...390

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 600
Rack travel in m: 13.40...13.60
2nd speed rpm : 950
Rack travel in m: 12.90...13.10
3rd speed rpm : 850
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300

E04

Rack travel in m: 11.00...11.10
2nd pressure hPa : 650
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del. quantity cm³/ : 214.0...218.0
1000 s: (211.0...221.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 08.92
 Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/950PA1031-6
 Governor no. : 0 421 801 662

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del. quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)

Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1200
 Del. quantity : 228.0...230.0
 1000 : (225.0...233.0)

Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1050...1080

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack travel: 8.80

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 13.00...13.10

2nd speed rpm : 600

Rack travel in m: 13.30...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.40...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 11.00...11.10

2nd pressure hPa : 650

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 950

Del. quantity cm³/ : 214.0...218.0

1000 s: (211.0...221.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm³/ : 134.0...136.0

1000 s: (131.0...139.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 990...1005

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 945
 Injection pump
 Pump designation : PE8P120A32OLS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1030-6
 Governor no. : 0 421 801 666

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 13.00
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 355...395

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.00...13.10
2nd speed rpm : 1050
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.20

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.70...10.80
2nd pressure hPa : 650
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 9.90...10.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 946
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1031-7
 Governor no. : 0 421 801 667

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA
 1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1
 Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 13.00...13.10
 Del. quantity cm³/ : 22.5...22.7
 100 s: (22.2...23.0)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.5
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1200
 Del. quantity : 225.0...227.0
 1000 : (222.0...230.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.00...13.10
2nd speed rpm : 1050
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.20

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 10.70...10.80
2nd pressure hPa : 650
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050

Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.01.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 950
 Injection pump
 Pump designation : PE8P120A320LS7860
 EP type number : 0 412 628 870
 Governor
 Governor design. : RQV350...1050PA1052
 Governor no. : 0 421 814 037

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 90...110

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.1...4.7

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.00...1.50

2nd speed rpm : 403
 travel mm : 1.70...2.20

3rd speed rpm : 453
 travel mm : 2.30...2.80

4th speed rpm : 770
 travel mm : 4.70...5.20

5th speed rpm : 1108
 travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1185
 Rack travel in mm : 10.00...12.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 11.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 250
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION
Speed rpm : 380...450

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.90...13.00
2nd speed rpm : 1050
Rack travel in m: 12.20...12.40
3rd speed rpm : 900
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 10.40...10.50
2nd pressure hPa : 750
Rack travel in m: 12.10...12.30

START CUT-OFF

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 154.0...158.0 *
1000 s: (151.0...161.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 953
 Injection pump
 Pump designation : PE8P120A320LS7859
 EP type number : 0 412 628 869
 Governor
 Governor design. : RQV300...950PA1033
 -10
 Governor no. : 0 421 814 040

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 320.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 13.60...13.70
 Del.quantity cm³/ : 24.1...24.3
 100 s: (23.8...24.6)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 567
 travel mm : 4.40...4.90
 3rd speed rpm : 617
 travel mm : 5.00...5.50
 4th speed rpm : 780
 travel mm : 6.10...6.60
 5th speed rpm : 1009
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1000
Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.30...10.40
2nd pressure hPa : 550
Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 220 (240)

E14

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 955
 Injection pump
 Pump designation : PE8P120A320LS7859
 EP type number : 0 412 628 869
 Governor
 Governor design. : RQ300/950PA1031-9
 Governor no. : 0 421 801 675

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 13.60...13.70
 Del. quantity cm³/ : 24.1...24.3
 100 s : (23.8...24.6)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.5
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.6
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1000
 Del. quantity : 241.0...243.0
 1000 : (238.0...246.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.30...10.40
2nd pressure hPa : 550
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 65.0...95.0
1000 s: (61.0...99.0)
Rack travel in mm : 9.40...9.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 h1
 Edition : 18.12.92
 Replaces : 06.91
 Test oil : ISO-4113
 Combination no. : 0 402 649 813
 Injection pump
 Pump designation : PE10P120A520LS7825-1
 EP type number : 0 412 629 809
 Governor
 Governor design. : RQV250...1150PA902-3
 Governor no. : 0 421 813 761

Customer-spec. information
 Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7-
 : 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 : 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.30...13.40
 Del.quantity cm³/ : 29.4...29.6
 100 s: (29.1...29.9)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 8.8...9.0
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm³ : 0.8
 100 s: (1.2)
 3rd speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...6.0 **
 100 s: (-)
 Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 250
 travel mm : 0.90...1.10
 2nd speed rpm : 450
 travel mm : 2.90...3.50
 3rd speed rpm : 750
 travel mm : 5.50...5.90
 4th speed rpm : 1150
 travel mm : 9.20...9.40
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1280

Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 294.0...296.0
1000 : (291.0...299.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0**
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : 0 *
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : 0.00...7.00
Del.quantity cm³/ : 0 *
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 0.00...7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 **
1000 s: (-)

Remarks:

: MAN-NR. 3-7151

* applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 649 814
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQ300/950PA950-1
 Governor no. : 0 421 801 651

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF 06
 1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000
 (A) Injection pump settings values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7-
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 13.30...13.40
 Del.quantity cm³/ : 22.3...22.5
 100 s: (22.0...22.8)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950
 Aeroid pressure h: 1000
 Del.quantity : 223.0...225.0
 1000 : (220.0...228.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.30...13.40
2nd speed rpm : 600
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 430
Rack travel in m: 10.50...10.60
3rd pressure hPa : 700
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 219.0...225.0
1000 s: (216.0...228.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7222

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 10
start of delivery

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113

Combination no. : 0 402 678 821

Injection pump
 Pump designation : PE8P120A320LS7860-1
 EP type number : 0 412 628 871
 Governor
 Governor design. : RSV350...1050POA535
 -11
 Governor no. : 0 421 833 391

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 402 LA

1st version kw : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...5.3

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1200

Del. quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:
1st rack travel in: 11.90
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1150...1168
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE ?
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 375...435

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.40...13.60
3rd speed rpm : 900
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.80

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 750
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 678 822
 Injection pump
 Pump designation : PE8P120A320LS7840-2
 EP type number : 0 412 628 873
 Governor
 Governor design. : RSV350...1050POA535
 -10
 Governor no. : 0 421 833 395

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 442 A

1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1200

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:
1st rack travel in: 11.70
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1150...1168
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 385...445

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.60...12.70
2nd speed rpm : 700
Rack travel in m: 12.80...13.00
3rd speed rpm : 900
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.90...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 700
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 208.0...212.0
1000 s: (205.0...215.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 735 805

Injection pump
 Pump designation : PES5P120A72Q/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA962-6
 K
 Governor no. : 0 421 815 301

Customer-spec. information
 Customer : MAN

Engine : D2865LF06/LU06

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness : 8.00x2.50x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.2

Del. quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 8.70...8.90

2nd speed rpm : 325
 travel mm : 2.40...2.60

3rd speed rpm : 520
 travel mm : 4.20...4.80

4th speed rpm : 810
 travel mm : 6.00...6.40

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 9.20...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del. quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 288...296

Testing:

1st rack travel in: 11.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 242...250

Testing:

Speed rpm : 250
Minimum rack travel: 6.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 12.10...12.30
3rd speed rpm : 650
Rack travel in m: 12.00...12.20
4th speed rpm : 400
Rack travel in m: 11.10...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.40...12.50

E27

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 170
Rack travel in m: 8.70...8.80
3rd pressure hPa : 600
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 243.0...249.0
1000 s: (240.0...252.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del. quantity cm³/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.80...5.20
Del. quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7202

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 f
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 735 806

Injection pump
 Pump designation : PES5P120A720/3LS7250
 EP type number : 0 412 725 809
 Governor
 Governor design. : RQV325...1000PA960
 -8K

Governor no. : 0 421 815 308

Customer-spec. information
 Customer : MAN

Engine : D2865LF03

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

F01

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.80...11.90

Del. quantity cm³/ : 26.6...26.8

100 s: (26.3...27.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.2

Del. quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055
 travel mm : 10.40...10.60

2nd speed rpm : 325
 travel mm : 2.40...2.60

3rd speed rpm : 500
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 6.80...7.20

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1130

Rack travel in mm : 9.10...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1200
Del. quantity : 266.0...268.0
1000 : (263.0...271.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 293...301

Testing:
1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 248...256

Testing:
Speed rpm : 225
Minimum rack travel: 6.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 340...450

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 11.80...11.90
2nd speed rpm : 1000
Rack travel in m: 12.00...12.20
3rd speed rpm : 900
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.30...12.50

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 170
Rack travel in m: 8.60...8.70

F02

3rd pressure hPa : 600
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 245.0...251.0
1000 s: (242.0...254.0)
Aneroid pressure h: 1200
Speed rpm : 900
Del. quantity cm³/ : 260.0...266.0
1000 s: (257.0...269.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del. quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7201

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w
 Edition : 11.01.93
 Replaces : 05.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 806
 Injection pump
 Pump designation : PES6P110A12ORS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964K
 Governor no. : 0 421 815 252

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kw : 171.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.60...1.80

2nd speed rpm : 600

travel mm : 2.80...3.30

3rd speed rpm : 1300

travel mm : 7.20...7.40

4th speed rpm : 1500

travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1500

Del.quantity : 168.5...170.5

1000 : (165.5...173.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 14.80
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 15.80...15.90
2nd speed rpm : 825
Rack travel in m: 14.70...14.90
3rd speed rpm : 700
Rack travel in m: 14.00...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1500
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 400
Rack travel in m: 10.20...10.30
3rd pressure hPa : 930
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 300 (310)

F04

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 825
Del.quantity cm³/ : 178.0...184.0
1000 s: (175.0...187.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.80
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 12.40...13.40

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921769

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2
 Edition : 08.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 816
 Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964
 -8K
 Governor no. : 0 421 815 264

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del. quantity cm³/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del. quantity cm³/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 700
 travel mm : 5.90...6.30

4th speed rpm : 1200
 travel mm : 9.00...9.20

5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 191.5...193.5

1000 : (188.5...196.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.20
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 650
Rack travel in m: 12.60...13.00
3rd speed rpm : 1200
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 335
Rack travel in m: 9.60...9.70
3rd pressure hPa : 785
Rack travel in m: 12.80...13.20

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 183.5...189.5
1000 s: (180.5...192.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : C.D.C. # 3921770

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 823
 Injection pump
 Pump designation : PES6P110A12ORS7249
 EP type number : 0 412 716 807
 Governor
 Governor design. : RQV350...1150PA964
 -9K
 Governor no. : 0 421 815 295

Customer-spec. information
 Customer : CDC

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

F07

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 700
 travel mm : 5.90...6.30

4th speed rpm : 1200
 travel mm : 9.00...9.20

5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 1200
 Del.quantity : 178.0...180.0
 1000 : (175.0...183.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 61...69

Testing:

1st rack travel in: 13.30
Speed rpm : 1195...1205
2nd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 275
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.30...14.40
2nd speed rpm : 650
Rack travel in m: 11.60...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1150
Pressure hPa : 1200
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 7.90...8.30
2nd pressure hPa : 320
Rack travel in m: 9.60...9.70
3rd pressure hPa : 860
Rack travel in m: 13.20...13.60

START CUT-OUT

F08

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 165.0...171.0
1000 s: (162.0...174.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 83.5...87.5
1000 s: (81.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1195...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.90...11.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 23.5...29.5
1000 s: (21.5...31.5)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

: C.D.C. # 3921970

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 22.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 829
 Injection pump
 Pump designation : PES6P120A12ORS7261
 EP type number : 0 412 726 876
 Governor
 Governor design. : RQV350...1100PA924
 -7K
 Governor no. : 0 421 815 317

Customer-spec. information
 Customer : CUMMINS

Engine : 6CTAA

1st version kW : 202.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ' : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.00...12.10
 Del.quantity cm³/ : 16.5...16.7
 100 s: (16.5...17.3)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 2.3...2.9
 100 s: (2.1...3.1)
 Spread cm³ : 0.7
 100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.10...1.50
 2nd speed rpm : 550
 travel mm : 3.40...4.00
 3rd speed rpm : 900
 travel mm : 6.10...6.70
 4th speed rpm : 1150
 travel mm : 8.40...8.60
 5th speed rpm : 1250
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1400
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200

Del. quantity : 165.0...167.0
1000 : (165.0...173.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:

1st rack travel in: 11.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 250
Minimum rack travel: 6.30
Speed rpm : 350
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 11.20...11.40
3rd speed rpm : 900
Rack travel in m: 11.40...11.70
4th speed rpm : 500
Rack travel in m: 10.40...10.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 700

F10

Rack travel in m: 11.10...11.20
3rd pressure hPa : 320
Rack travel in m: 8.20...8.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del. quantity cm3/ : 181.0...187.0
1000 s: (178.0...190.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 105.0...109.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 250.0...280.0
1000 s: (246.0...284.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.70...4.90
Del. quantity cm3/ : 23.0...29.0
1000 s: (21.0...31.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

: C.D.C # 3281842

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 h
Edition : 18.12.92
Replaces : 09.92
Test oil : ISO-4113
Combination no. : 0 402 746 883
Injection pump
Pump designation : PES6P110A32ORS7198
EP type number : 0 412 716 802
Governor
Governor design. : RQV275...1250PA942K
Governor no. : 0 421 815 234

Customer-spec. information
Customer : RVI

Engine : MIDR06-06-26

1st version kw : 132.5
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.53...4.63
: (4.48...4.68)
Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.60...14.70
& maximum rack tra: 21.00
Difference ° CS : 2.50...4.00

BASIC SETTING

1st speed rpm : 1250
Rack travel in mm : 14.60...14.70
Del.quantity cm3/ : 15.7...15.9
100 s: (15.4...16.1)
Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 4.9...5.3
Del.quantity cm3/ : 1.7...2.2
100 s: (1.4...2.4)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300
travel mm : 9.50...9.70
2nd speed rpm : 275
travel mm : 0.90...1.10
3rd speed rpm : 550
travel mm : 3.80...4.20
4th speed rpm : 1000
travel mm : 7.10...7.50
5th speed rpm : 1600
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1385
Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1000
Del. quantity : 157.0...159.0
1000 : (154.5...161.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.60
Speed rpm : 1315...1325
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 350...480

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.60...14.70
2nd speed rpm : 750
Rack travel in m: 13.70...13.90
3rd speed rpm : 300
Rack travel in m: 12.39...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 14.60...14.70

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 11.00...11.40

2nd pressure hPa : 360
Rack travel in m: 12.80...12.90
3rd pressure hPa : 220
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del. quantity cm³/ : 125.0...129.0
1000 s: (122.0...132.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 67.0...69.0
1000 s: (64.5...71.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1315...1325

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 85.0...115.0
1000 s: (81.0...119.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.30
Del. quantity cm³/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 i
 Edition : 18.12.92
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 894
 Injection pump
 Pump designation : PES6P110A320RS7208
 EP type number : 0 412 716 803
 Governor
 Governor design. : RQV275...1175PA942
 -1K
 Governor no. : 0 421 815 244

Customer-spec. information
 Customer : RVI

Engine : MIDR060226 M

1st version kW : 210.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.03...4.13
 : (3.98...4.18)

Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10
 & maximum rack tra: 21.00
 Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 17.0...17.2

100 s: (16.7...17.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.5

Del. quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 9.10...9.20

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 550

travel mm : 3.80...4.20

4th speed rpm : 1000

travel mm : 7.00...7.40

5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h : 1000
Del. quantity : 170.0...172.0
1000 : (167.5...174.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 56...64

Testing:
Speed rpm : 200
Minimum rack travel: 5.80
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...480

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 13.25...13.45
3rd speed rpm : 800
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1175
Pressure hPa : 1000
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 1175

1st pressure hPa : -

F14

Rack travel in m: 10.40...11.00
2nd pressure hPa : 520
Rack travel in m: 12.50...12.60
3rd pressure hPa : 240
Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del. quantity cm³/ : 148.0...154.0
1000 s: (145.0...157.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 74.0...76.0
1000 s: (71.5...78.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 13.00
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 90.0...120.0
1000 s: (86.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -8.50...-9.10
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,8 L1
 Edition : 05.02.93
 Replaces : 11,91
 Test oil : ISO-4113
 Combination no. : 0 402 746 898
 Injection pump
 Pump designation : PES6P120A32ORS7215
 EP type number : 0 412 726 838
 Governor
 Governor design. : RQV250...1000PA967
 Governor no. : 0 421 813 876

Customer-spec. information

Customer : ENASA

Engine : 96 R1 FX

1st version kW : 294.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 28.8...29.0

100 s: (28.5...29.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...6.1

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.10...2.60

3rd speed rpm : 700
 travel mm : 4.70...5.30

4th speed rpm : 1055
 travel mm : 7.90...8.10

5th speed rpm : 1145
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200

Del. quantity : 288.0...290.0
1000 : (285.0...293.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.00
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:

Speed rpm : 100
Minimum rack travel: 5.00
Speed rpm : 250
Rack travel in mm : 3.30...3.70

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 710
Rack travel in m: 11.80...11.90
3rd pressure hPa : 350
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

F16

Aneroid pressure h: 1200
Speed rpm : 900
Del. quantity cm3/ : 279.0...283.0
1000 s: (276.0...286.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 146.0...149.0
1000 s: (143.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack in: 12.00
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.30...3.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 1
 Edition : 21.01.93
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 746 902

Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 340
 Governor
 Governor design. : RQV275...1100PA975
 -1K
 Governor no. : 0 421 815 267

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.320

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.1...5.5
 Del.quantity cm³/ : 3.2...3.8
 100 s: (2.9...4.1)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50

2nd speed rpm : 275
 travel mm : 1.30...1.50

3rd speed rpm : 450
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 5.90...6.30

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 209.0...211.0
 1000 : (206.0...214.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 700
Rack travel in m: 9.90...10.10
3rd speed rpm : 900
Rack travel in m: 10.70...10.90
4th speed rpm : 400
Rack travel in m: 9.30...9.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 600
Rack travel in m: 10.60...10.70
3rd pressure hPa : 420

F18

Pack travel in m: 9.10...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 188.0...194.0
1000 s: (185.0...197.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 32.0...38.0
1000 s: (29.0...41.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113

Combination no. : 0 402 746 919X

Injection pump
 Pump designation : PES6P120A720LS7237
 -10

EP type number : 0 412 726 872
 Governor
 Governor design. : RQ300/1100PA1013-1
 Governor no. : 0 421 801 603

Cust. part no. : 0220743402

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1145...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.80...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.40...12.50
2nd pressure hPa : 950
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -

F20

Speed rpm : 500
Del.quantity cm³/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 l
 Edition : 11.01.93
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 746 924

Injection pump
 Pump designation : PES6P110A32ORS7243
 EP type number : 0 412 716 806
 Governor
 Governor design. : RQV275...1250PA942
 -2K
 Governor no. : 0 421 815 288

Customer-spec. information
 Customer : RVI

Engine : MIDR06-06-26 L/2

1st version kW : 132.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

F21

Prestroke mm : 4.85...4.95
 : (4.80...5.00)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 13.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 1.00...2.25

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 14.0...14.2

100 s: (13.7...14.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.4...7.8

Del. quantity cm³/ : 2.4...2.8

100 s: (2.4...2.8)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320
 travel mm : 9.70...9.90

2nd speed rpm : 275
 travel mm : 0.90...1.10

3rd speed rpm : 600
 travel mm : 4.20...4.60

4th speed rpm : 1000
 travel mm : 7.00...7.40

5th speed rpm : 1600
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1450

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h : 1000
Del.quantity : 140.0...142.0
1000 : (137.5...144.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 272...280

Testing:

1st rack travel in: 12.00
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 218...226

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 13.00...13.10
2nd speed rpm : 650
Rack travel in m: 12.00...12.10
3rd speed rpm : 300
Rack travel in m: 11.20...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

F22

Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 10.10...10.50
2nd pressure hPa : 280
Rack travel in m: 11.20...11.30
3rd pressure hPa : 180
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm³/ : 124.5...128.5
1000 s: (124.5...128.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)
Spread cm³ : 10.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...130.0
1000 s: (96.0...134.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 24.0...28.0
1000 s: (24.0...28.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 l 1
 Edition : 11.01.93
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 928
 Injection pump
 Pump designation : PES6P110A32ORS7243
 EP type number : 0 412 716 806
 Governor
 Governor design. : RQV275...1175PA942
 -3K
 Governor no. : 0 421 815 294

Customer-spec. information
 Customer : RVI

Engine : MIDR06-06-26 M/2

1st version kW : 132.5
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.85...4.95
 : (4.80...5.00)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 13.40...13.50
 & maximum rack tra: 21.00
 Difference ° CS : 1.00...2.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 15.2...15.4

100 s: (14.9...15.6)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del. quantity cm³/ : 2.3...2.7

100 s: (2.3...2.7)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 9.10...9.30

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 600

travel mm : 4.20...4.60

4th speed rpm : 1000

travel mm : 7.00...7.40

5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175
Aneroid pressure h : 1000
Del. quantity : 152.0...154.0
1000 : (149.5...156.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 290...298

Testing:

1st rack travel in: 12.40
Speed rpm : 1255...1265
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 238...246

Testing:

Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 13.40...13.50
2nd speed rpm : 700
Rack travel in m: 12.55...12.75
3rd speed rpm : 300
Rack travel in m: 11.70...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1175
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

F24

Speed 1/min : 1175

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 420
Rack travel in m: 11.65...11.75
3rd pressure hPa : 240
Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del. quantity cm³/ : 149.0...153.0
1000 s: (146.0...156.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...130.0
1000 s: (96.0...134.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.30
Del. quantity cm³/ : 23.0...27.0
1000 s: (23.0...27.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 444 110A
 Injection pump
 Pump designation : PES4MW100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RQV300...1300MW48-1
 Governor no. : 0 420 083 084

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 364 LA

1st version kw : 85.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness : 8.00X2.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 8.0...8.2

100 s : (7.8...8.4)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...6.9

Del. quantity cm³/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340
 travel mm : 8.50...8.70

2nd speed rpm : 1450
 travel mm : 9.50...9.90

3rd speed rpm : 500
 travel mm : 2.70...3.30

4th speed rpm : 300
 travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 10.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:
Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.80...6.90

CONSTANT REGULATION
Speed rpm : 320...550

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 11.60...11.80
3rd speed rpm : 1175
Rack travel in m: 11.00...11.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.20

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.00...11.20
3rd pressure hPa : 700
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

F26

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 75.5...78.5
1000 s: (73.0...81.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...95.0
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.80...6.90
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 D
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 446 249
 Injection pump
 Pump designation : PES6MW100/72ORS1197
 EP type number : 0 413 406 185
 Governor
 Governor design. : RQV325...1350MW109K
 Governor no. : 0 420 083 997

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6000

1st version kw : 169.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.7...7.9

Del.quantity cm³/ : 2.5...2.9

100 s: (2.2...3.1)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 10.00...10.40

2nd speed rpm : 825
 travel mm : 4.90...5.10

3rd speed rpm : 400
 travel mm : 2.90...3.50

4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 850
 Del.quantity : 101.0...103.0
 1000 : (99.0...105.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 117...125

Testing:
1st rack travel in: 13.00
Speed rpm : 1420...1430
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 13.60...13.80
3rd speed rpm : 1000
Rack travel in m: 13.20...13.50
4th speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500
1st pressure hPa : 350
Rack travel in m: 11.90...12.00
2nd pressure hPa : 550
Rack travel in m: 12.80...13.10
3rd pressure hPa : 850
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 850
Speed rpm : 1200

Del. quantity cm³/ : 100.5...103.5
1000 s: (98.0...106.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 79.0...81.0
1000 s: (77.0...83.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 55.0...75.0
1000 s: (52.0...78.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del. quantity cm³/ : 25.0...29.0
1000 s: (22.5...31.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

* Adjusting starting fuel delivery
(O 403 446 249)

1. Cold start

- Loosen adjusting screw for lug cam
- Fully screw in TAS
- Set engine speed 100 1/min
- Screw in adjusting screw until control-rod travel jumps from 13.4 mm to 21 mm; in doing so, constantly move control lever back and forth from idle to full-load position
- Lock adjusting screw
- Screw in cap for limiting starting fuel delivery. Delivery rate 95...115 ccm/1000 strokes

2. Warm start

- Set engine speed 265...275 1/min
- Screw out TAS until control-rod travel jumps from 11.2 mm to

13.4 mm. In doing so, constantly
move control lever back and forth
from idle to full-load position.

Lock TAS

- Set engine speed 100 1/min,
control lever in full-load
position. Control-rod travel must
not exceed 13.4 mm.
- Delivery rate 55...75 ccm/1000
strokes



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 290
 Injection pump
 Pump designation : PES6MW100/320RS1224
 EP type number : 0 413 406 210
 Governor
 Governor design. : RQV350...1100MW120K
 Governor no. : 0 420 083 993

Customer-spec. information
 Customer : VME

Engine : TD 61 KBE

1st version kw : 115.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

G02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150
 travel mm : 9.80...10.20

2nd speed rpm : 850
 travel mm : 6.90...7.10

3rd speed rpm : 550
 travel mm : 3.50...4.10

4th speed rpm : 350
 travel mm : 1.00...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1500
 Del.quantity : 124.0...126.0
 1000 : (122.0...128.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 118...126

Testing:
 1st rack travel in: 13.20

Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1350
Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 350
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.20...14.30
2nd speed rpm : 830
Rack travel in m: 14.90...15.00
3rd speed rpm : 735
Rack travel in m: 14.50...14.70
4th speed rpm : 600
Rack travel in m: 13.20...13.60
5th speed rpm : 970
Rack travel in m: 14.40...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 830
Pressure hPa : 250
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 830

1st pressure hPa : 1500
Rack travel in m: 14.90...15.00
2nd pressure hPa : -
Rack travel in m: 10.70...10.80
3rd pressure hPa : 660
Rack travel in m: 14.50...14.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 830
Del.quantity cm3/ : 135.0...139.0
1000 s: (132.0...142.0)
Spread cm3 : 6.00
1000 s: (9.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 61.0...63.0
1000 s: (59.0...65.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 310
 Injection pump
 Pump designation : PES6MW100/320RS1227Z
 EP type number : 0 413 406 217
 Governor
 Governor design. : RGV325...1300MW126
 Governor no. : 0 420 083 279

Cust. part no. : 1249952

Customer-spec. information
 Customer : DAF

Engine : NS133L

1st version kw : 133.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

G04

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 13.50...0.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 4.4...4.6

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.40...8.80

2nd speed rpm : 875
 travel mm : 4.90...5.10

3rd speed rpm : 500
 travel mm : 2.70...3.30

4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 90.0...92.0
 1000 : (88.0...94.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:
1st rack travel in: 10.60
Speed rpm : 1330...1340
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.5

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 600

1st pressure hPa : 290
Rack travel in m: 11.20...11.30
2nd pressure hPa : 160
Rack travel in m: 10.30...10.60
3rd pressure hPa : -
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm³/ : 89.5...92.5
1000 s: (87.0...95.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1330...1340

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.40...4.60
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 22.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 311
 Injection pump
 Pump designation : PES6MW100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQV300...1300MW50-28
 Governor no. : 0 420 083 281

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kw : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.40...10.00

2nd speed rpm : 1350
 travel mm : 8.50...8.70

3rd speed rpm : 500
 travel mm : 2.70...3.30

4th speed rpm : 300
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Setting point:
Speed rpm : 1350
Rack travel in mm : 16.5

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 200
Rack travel in m: 11.20...11.30
3rd pressure hPa : 350
Rack travel in m: 12.40...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 22.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 312
Injection pump
Pump designation : PES6MW100/72ORS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW50-29
Governor no. : 0 420 083 282

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kw : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del. quantity cm3/ : 9.8...10.0

100 s : (9.6...10.2)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm3 : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Setting point:
Speed rpm : 1350
Rack travel in mm : 16.5

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 200
Rack travel in m: 11.20...11.30
3rd pressure hPa : 350
Rack travel in m: 12.40...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 25.09.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 446 313
 Injection pump
 Pump designation : PES6MW100/720RS1228
 EP type number : 0 413 406 213
 Governor
 Governor design. : RQV325...1350MW127K
 Governor no. : 0 420 083 988

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6200

1st version kW : 167.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.20...12.30
 Del. quantity cm³/ : 11.5...11.7
 100 s : (11.3...11.9)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 6.5...6.7
 Del. quantity cm³/ : 2.0...2.4
 100 s : (1.7...2.6)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 10.00...10.40
 2nd speed rpm : 825
 travel mm : 4.90...5.10
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 115.5...117.5
 1000 : (113.5...119.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 120...128

Testing:
1st rack travel in: 12.10
Speed rpm : 1420...1430
2nd rack travel in: 4.00
Speed rpm : 1515...1545
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 6.50...6.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.20...12.30
2nd speed rpm : 1200
Rack travel in m: 13.40...13.60
3rd speed rpm : 900
Rack travel in m: 12.60...12.80
4th speed rpm : 1350
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1200
Pressure hPa : -
Rack travel mm : 8.90...9.10

Measurement

Speed 1/min : 1200
1st pressure hPa : 450
Rack travel in m: 10.50...10.60
2nd pressure hPa : 800
Rack travel in m: 12.50...12.80
3rd pressure hPa : 1200
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200

Del.quantity cm³/ : 120.0...123.0
1000 s: (117.5...125.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 71.0...73.0
1000 s: (69.0...75.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...60.0
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

* Adjusting starting fuel delivery
(0 403 446 313)

1. Pre-setting
 - Loosen adjusting screw for lug cam
 - TAS pre-setting dimension:
59.8...66.2 mm (depth gauge)
2. Set manifold-pressure compensator (LDA)
3. Cold start
 - Screw in TAS approx. 3 turns
 - Set cold-start interlock at engine speed 280 1/min
 - Check release at engine speed 100 1/min
 - Set TAS to 9.4...9.6 mm at an engine speed of 500 1/min

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.02.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 320
Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1300MW67-8
Governor no. : 0 420 083 290

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kw : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.60...8.80

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.50

Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.50...10.60
2nd speed rpm : 850
Rack travel in m: 11.20...11.40
3rd speed rpm : 1100
Rack travel in m: 10.70...10.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.20...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.30
2nd pressure hPa : 300
Rack travel in m: 9.70...9.90
3rd pressure hPa : 400
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 850

Del.quantity cm³/ : 88.0...91.0
1000 s: (85.5...93.5)
Spread cm³ : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 403 456 125
 Injection pump
 Pump designation : PES6MW100/321RS1201
 EP type number : 0 413 406 190
 Governor
 Governor design. : RQV250...975/1200MW1
 28-1
 Governor no. : 0 420 083 289

Customer-spec. information
 Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 14.1...14.3

100 s: (13.8...14.6)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 11.00...11.20

2nd speed rpm : 1050

travel mm : 9.30...9.70

3rd speed rpm : 650

travel mm : 4.20...4.80

4th speed rpm : 350

travel mm : 2.10...2.50

5th speed rpm : 250

travel mm : 1.20...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1000

Del.quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 123...131

Testing:
1st rack travel in: 11.40
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:
Speed rpm : 150
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 12.80...12.90
2nd speed rpm : 600
Rack travel in m: 12.70...12.90
3rd speed rpm : 1000
Rack travel in m: 12.50...12.70
4th speed rpm : 1200
Rack travel in m: 12.40...12.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.70...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 155
Rack travel in m: 10.60...10.70
3rd pressure hPa : 550
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 139.0...143.0
1000 s: (136.0...146.0)
Spread cm³ : 6.00
1000 s: (9.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7197

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 N
 Edition : 18.12.92
 Replaces : 11.92
 Test oil : ISO-4113

Combination no. : 0 403 466 121

Injection pump
 Pump designation : PES6MW100/120RS1184
 EP type number : 0 413 406 171
 Governor
 Governor design. : RSV375...1250MW2A334
 Governor no. : 0 420 085 122

Customer-spec. information
 Customer : CUMMINS

Engine : 6 BTAA 5.9

1st version kW : 157.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 6.5...7.0

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1370...1400
3rd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.50...6.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.60
2nd pressure hPa : 650
Rack travel in m: 10.80...10.90
3rd pressure hPa : 720
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 102.0...104.0
1000 s: (100.0...106.0)
Spread cm³ : 5.00
1000 s: (7.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 75.0...85.0
1000 s: (72.0...88.0)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.50...7.00
Del. quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: CUM #3280646

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 03.02.93
 Replaces : 11.92
 Test oil : ISO-4113

Combination no. : 0 403 466 130

Injection pump
 Pump designation : FES6Mw100/12ORS1137-
 2

EP type number : 0 413 406 180
 Governor
 Governor design. : RSV550...1100Mw2A335
 -4

Governer no. : 0 420 085 206

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA

1st version kW : 179.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm³/ : 15.2...15.4

100 s : (14.9...15.7)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 550.0

Rack travel in mm : 6.6...7.0

Del.quantity cm³/ : 1.8...2.2
 100 s : (1.6...2.5)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 152.5...154.5

1000 : (149.5...157.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.50
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1240...1250
3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 6.20...6.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 400
Rack travel in m: 12.30...12.40
3rd pressure hPa : 630
Rack travel in m: 13.80...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 98.0...100.0
1000 s: (96.0...102.0)

BREAKAWAY

1st version

G20

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (127.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 6.60...7.00
Del.quantity cm3/ : 18.5...22.5
1000 s: (16.0...25.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: CUM #3925266

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 131
 Injection pump
 Pump designation : PES6MW100/12ORS1184
 EP type number : 0 413 406 171
 Governor
 Governor design. : RSV375...1250MW2A334
 -1
 Governor no. : 0 420 085 207

Customer-spec. information
 Customer : CUMMINS

Engine : 6 BTA 5.9

1st version kw : 140.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 11.0...11.2
 100 s: (10.8...11.4)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 375.0
 Rack travel in mm : 6.8...7.3
 Del. quantity cm³/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 800
 Del. quantity : 110.0...112.0
 1000 : (108.0...114.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 110...118

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 9.30
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1365...1395
3rd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1
Control Lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 6.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 6.30...6.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...9.90
2nd pressure hPa : 470
Rack travel in m: 10.00...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 89.0...91.0
1000 s: (87.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.80...7.30
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: CUM #3281954

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 03.02.93
 Replaces : 12.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 126
 Injection pump
 Pump designation : PES6MW100/320RS1132
 EP type number : 0 413 406 124
 Governor
 Governor design. : RSV300...1050MW4A352
 Governor no. : 0 420 085 201

Customer-spec. information
 Customer : VME

Engine : TD 61
 1st version kW : 122.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 2.90...3.00
 : (2.85...3.05)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.10...11.20
 Del.quantity cm³/ : 9.2...9.4
 100 s: (9.0...9.6)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.2
 Del.quantity cm³/ : 1.2...1.6
 100 s: (0.9...1.8)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del.quantity : 92.0...94.0
 1000 : (90.0...96.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 116...124

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1110...1140
3rd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1000
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 100
Rack travel in m: 10.30...10.40
3rd pressure hPa : 160
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2.5 L
Edition : 16.02.93
replaces : 23.11.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415
Type number : 0 460 414 083
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.20...4.60

Shutoff
electromagnet volt: 12

Supply-pump pressure

Speed 1/min: 500
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000s.: 32.20...33.20

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000s.: 6.00...8.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm³/
1000s.: 30.50...36.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...90.00
mind 1000s.: 50.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20...4.60
mm: (3.90...4.90)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
 ID travel mm: 2.00...2.80
 mm: (1.70...3.10)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 4.40...5.00
 bar: (4.20...5.20)

Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1000
 Supply-pump pressure bar: 5.70...6.30
 bar: (5.50...6.50)

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1250
 Supply-pump pressure bar: 6.20...6.80
 bar: (6.00...7.00)

Shutoff
 electromagnet Volt: 12

4th speed 1/min: 2000
 Supply-pump pressure bar: 7.80...8.40
 bar: (7.60...8.60)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 97.00...141.00
 (97.00...141.00)

2nd speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 115.00...184.00
 (115.00...184.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.00...38.40
 1000s.: (34.70...39.70)

2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: (0.00...5.00)

3rd speed 1/min: 2200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 23.20...25.20
 1000s.: (19.20...29.20)

4th speed 1/min: 2100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 30.50...36.50
 1000s.: (27.50...39.50)

5th speed 1/min: 1700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.50...38.90
 1000s.: (35.20...40.30)

6th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 32.20...33.20 E
 1000s.: (30.20...35.20)

7th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 24.00...28.00 F
 1000s.: (23.20...29.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Shutoff
 electromagnet Volt: -

Idle delivery:

1st speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 6.00...8.00
 1000s.: (3.00...11.00)

Dispersion cm³: 3.0
 1000s.: (4.0)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 2.00...10.00
 1000s.: (0.00...10.00)

Part-load del. at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 20.0

1st speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 17.00...20.00
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 21.00...31.00
1000S.: (21.00...31.00)

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 50.00...90.00
1000S.: (50.00...90.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: KOT

MS mm: 1.8

XK mm: -

XL mm: -

Remarks:

:
:

Overflow restriction 0.75 mm - Part No.
..343,..344

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mv :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

Pump/engine assignment:
Attach timing device cover KDEP 1151.
Plunger lift in blocking position =
0.30...
0.40 mm referenced to outlet "B".



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 15.02.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R514
Type number : 0 460 414 100
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8142.47.1811

Power KW: 85

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 58.00...59.00

Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm³/
1000S.: 25.00...26.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 22.00...28.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...90.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 24

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 1000

Inj.-qty. cm³/
difference 1000S.: - 28.0...30.0 #
Shutoff
electromagnet Volt: 24
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Charge press hPa: 1000
Supply pump
pressure
difference bar: - 0.1...0.3 #
Shutoff
electromagnet Volt: 24.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.20...1.00
mm: (0.00...1.30)

Shutoff
electromagnet volt: 24
5th speed 1/min: 1900
Charge press. hPa: 1000
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.60...4.20
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1900
Charge press. hPa: 1000

Supply-pump
pressure bar: 7.60...8.20
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 75.00...119.50
quantity cm³/10s: (60.00...134.50)
2nd speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 97.30...180.70
quantity cm³/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.7
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 43.00...44.00
1000S.: (39.50...47.50)
2nd speed 1/min: 2250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.00...28.00
1000S.: (20.50...29.50)
8th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 41.00...49.00
1000S.: (39.00...51.00)
9th speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 58.00...63.00
1000S.: (57.00...64.00)
12th speed 1/min: 1750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 58.00...59.00
1000S.: (55.00...62.00)
15th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 52.50...57.50
1000S.: (51.00...59.00)
18th speed 1/min: 550
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 25.00...26.00
1000S.: (22.00...29.00)
20th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 49.50...58.50
1000S.: (48.50...59.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)
Dispersion cm³/: 6.0
1000S.: (6.5)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: 1000
Inj.-qty. cm³/ : - 27.0..35.0"
difference 1000S.: -
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1250
Charge press. hPa: 1000
Inj.-qty. cm³/: MAX:
difference 1000S.: 2.00...8.00

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
Charge press. hPa: 1000
TD-travel : -0.7...0.9 "
difference mm: -
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1250
Charge press. hPa: 1000
TD-travel : - 0.6...1.4 '
difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 500
Shutoff
electromagnet volt: 24
Del. quantity cm³/: 14.00...30.00
1000S.: (14.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet volt: 24
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2100/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 P
Edition : 15.02.93
replaces : 23.07.91
Calibrating oil : ISO-4113

Injection pump : VE6/11F1350R417
Type number : 0 460 416 068
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 F01/OH

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 3.80...4.20

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 5.00...5.60

Full-load del. with charge press.:

Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 75.70...76.70
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 7.00...13.00
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1410
Del. quantity cm³/
1000S.: 57.00...63.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...80.00
mind 1000S.: 40.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
3rd speed 1/min: 800
TD travel mm: 3.80...4.20
mm: (3.30...4.70)
4th speed 1/min: 600
TD travel mm: 2.50...3.30
mm: (2.20...3.60)
6th speed 1/min: 1000
TD travel mm: 4.40...5.20
mm: (4.10...5.50)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.20...4.80
2nd speed 1/min: 800
Supply-pump
pressure bar: 5.00...5.60
3rd speed 1/min: 1350

Supply-pump
 pressure bar: 7.00...7.60
 4th speed 1/min: 1000
 Supply-pump
 pressure bar: 5.80...6.40

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1350
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1500
 Del. quantity cm3/: 0.00...15.00
 1000S.: (0.00...15.00)
 4th speed 1/min: 1450
 Del. quantity cm3/: 15.00...45.00
 1000S.: (15.00...45.00)
 5th speed 1/min: 1410
 Del. quantity cm3/: 57.00...63.00
 1000S.: (55.50...64.50)
 9th speed 1/min: 1350
 Del. quantity cm3/: 75.20...78.20
 1000S.: (73.70...79.70)
 11th speed 1/min: 800
 Del. quantity cm3/: 74.20...78.20
 1000S.: (72.70...79.70)
 12th speed 1/min: 1000
 Del. quantity cm3/: 75.70...76.70
 1000S.: (73.70...78.70)
 20th speed 1/min: 600
 Del. quantity cm3/: 58.50...64.50
 1000S.: (57.50...65.50)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1350
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
 Del. quantity cm3/: 7.00...13.00
 1000S.: (5.00...15.00)
 Dispersion cm3/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450

H06

Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
 Del. quantity cm3/: 60.00...120.00
 1000S.: (60.00...120.00)

2nd speed 1/min: 500
 Del. quantity cm3/: 40.00...70.00
 1000S.: (40.00...70.00)

4th speed 1/min: 100
 Del. quantity cm3/: 40.00...80.00
 1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: K-OT
 MS mm: 1.0...1.4
 SVS max. mm: 3,7

Remarks:
 :
 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
Edition : 12.02.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1950L448
Type number : 0 460 426 193
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TD 42A

Power KW: 170

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 901 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1500
Setting value mm: 2.40...2.80

Supply-pump pressure

H07

Speed 1/min: 1500
Charge press hPa: 1500
Setting value bar: 7.7...8.3

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1500
Del. quantity cm³/
1000S.: 130.7...131,7
Dispersion cm³/: 5.0

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 58,50...59.50

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 17.00...21.00
Del. quantity cm³/: 5.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2150
Charge press hPa: 800
Del. quantity cm³/
1000S.: 24.00...30.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...140.00
mind 1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
Charge press hPa: 1500
TD travel mm: 0.60...1.60
mm: (0.40...1.80)

2nd speed 1/min: 1500
Charge press hPa: 1500
TD travel mm: 2.40...2.80
mm: (2.10...3.10)

3rd speed 1/min: 1900
Charge press hPa: 1500
TD travel mm: 4.10...4.90
mm: (3.80...5.20)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1500
 Supply-pump pressure bar: 4.80...5.40
 2nd speed 1/min: 1100
 Charge press. hPa: 1500
 Supply-pump pressure bar: 6.50...7.10
 3rd speed 1/min: 1500
 Charge press. hPa: 1500
 Supply-pump pressure bar: 7.70...8.30
 4th speed 1/min: 1900
 Charge press. hPa: 1500
 Supply-pump pressure bar: 8.80...9.40

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1500
 Overflow quantity cm³/10s: 75.00...119.40
 (60.00...134.40)
 2nd speed 1/min: 1950
 Charge press. hPa: 1500
 Overflow quantity cm³/10s: 97.20...180.50
 (82.20...195.50)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 700*
 LDA-stroke mm: 7.5
 Del. quantity cm³/1000S.: 89.50...90.50
 (84.00...96.00)
 2nd speed 1/min: 2300
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 0.00...3.00
 -
 3rd speed 1/min: 2150
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 24.00...30.00
 (21.00...33.00)
 4th speed 1/min: 2050
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 101.00...115.00
 (94.00...122.00)
 5th speed 1/min: 1950
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 124.00...128.00
 (123.00...129.00)
 6th speed 1/min: 1800
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 130.70...131.70
 (129.20...133.20)
 7th speed 1/min: 1500
 Charge press. hPa: 1500

Del. quantity cm³/1000S.: 135.00...140.00
 (134.00...141.00)
 8th speed 1/min: 1100
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 84.50...88.50
 (83.00...90.00)
 9th speed 1/min: 900
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 123.50...128.50
 (122.50...129.50)
 10th speed 1/min: 600
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 117.00...121.00
 (115.00...123.00)
 11th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/1000S.: 58.50...59.50
 (57.00...61.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1950
 Charge press. hPa: 1500
 Del. quantity cm³/1000S.: 0.00...3.00
 -

Electr. shutoff:

1st speed 1/min: 400
 Charge press. hPa: -
 Del. quantity cm³/1000S.: 0.00...3.00
 -
 Shutoff electromagnet volt: 12.0

Idle delivery:

1st speed 1/min: 400
 Del. quantity cm³/1000S.: 17.00...21.00
 (15.00...23.00)
 Dispersion cm³/1000S.: 5.0
 -
 2nd speed 1/min: 550
 Del. quantity cm³/1000S.: 0.0...3.0
 -
 3rd speed 1/min: 450
 Del. quantity cm³/1000S.: 6.00...12.00
 (4.00...14.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Del. quantity cm³/1000S.: 60.00...90.00
 -
 2nd speed 1/min: 100
 Del. quantity cm³/1000S.: 80.00...140.00
 -

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: K-OF

MS mm: -

SVS max. mm: 2,6

LDA stroke mm: 7.5

Remarks:

⋮
⋮

Pushing electromagnet.

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 15.02.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE6/12F1200R496
Type number : 0 460 426 209
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 LF 07

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 2.00...2.40

Supply-pump pressure

H10

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 7.30...7.90

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 93.50...94.50
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 59.50...60.50

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
1000S.: 16.50...23.50
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1280
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 62.00...68.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 950
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 0.60...1.40
mm: (0.30...1.70)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.50...6.10
 2nd speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.30...7.90
 3rd speed 1/min: 1200
 Charge press. hPa: 1000
 Supply-pump pressure bar: 9.00...9.60

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow quantity cm³/10s: 41.70...83.40 (26.70...98.40)
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00 (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
 Charge-air pressure-setting point hPa: 450
 LDA-stroke mm: 7.5
 Del. quantity cm³/1000S.: 92.50...93.50 (90.50...95.50)
 2nd speed 1/min: 1450
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00 (0.00...3.00)
 3rd speed 1/min: 1350
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...15.00 (0.00...15.00)
 4th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 15.00...55.00 (15.00...55.00)
 5th speed 1/min: 1280
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 62.00...68.00 (60.50...69.50)
 9th speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 88.20...93.20 (86.70...94.70)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 73.50...94.50 (91.50...96.50)
 15th speed 1/min: 800
 Charge press. hPa: 1000

Del. quantity cm³/1000S.: 92.90...97.90 (91.40...99.40)
 17th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 98.60...103.60 (97.10...105.10)
 18th speed 1/min: 500
 Charge press. hPa: -
 Del. quantity cm³/1000S.: 59.50...60.50 (57.50...62.50)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 102.40...111.40 (100.90...112.90)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00 (0.00...3.00)

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 250
 Del. quantity cm³/1000S.: 16.50...23.50 (14.50...25.50)
 Dispersion cm³/1000S.: 6.0 (6.5)
 2nd speed 1/min: 400
 Del. quantity cm³/1000S.: 0.00...3.00 (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 330
 Del. quantity cm³/1000S.: 70.00...100.00 (70.00...100.00)
 2nd speed 1/min: 430
 Del. quantity cm³/1000S.: 40.00...70.00 (40.00...70.00)
 4th speed 1/min: 100
 Del. quantity cm³/1000S.: 60.00...100.00 (60.00...100.00)

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: K-OT
 MS mm: 0.9...1.3
 LDA stroke mm: 7.5

Remarks:

:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 15.02.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R317-6
Type number : 0 460 484 061
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : F8Q - 706 CA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 127.00...130.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.20...3.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.60...32.60
Shutoff
electromagnet Volt: 12.0
Dispersion cm3/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 410
Del. quantity cm3/
1000S.: 7.5...11.5
Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 23.00...29.00
Shutoff
electromagnet Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: - 10.5..12.5 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure difference bar: - 0.1...0.3 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12
8th speed 1/min: 500
TD travel mm: 2.20...4.60
mm: -

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 310
TD travel mm: 1.00...3.40
mm: -

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 3.10...3.70
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.40...5.00
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

H14

1st speed 1/min: 750
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...15.00
1000S.: (6.00...16.00)

5th speed 1/min: 2450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...28.00
1000S.: (21.00...29.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.50...33.50
1000S.: (30.20...34.80)

10th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.30...32.30
1000S.: (29.00...33.60)

11th speed 1/min: 1625
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.70...32.70
1000S.: (28.90...33.50)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.00...32.00
1000S.: (29.20...33.80)

20th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.10...33.10
1000S.: (29.30...33.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 410
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.50...11.50
1000S.: (5.50...13.50)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...5.00
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : -13.2..17.2 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Inj.-qty. cm³/: MAX:2.0..8.0'
difference 1000S.: -
Shutoff
electromagnet Volt: 12.0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

1st speed 1/min: 1250
TD-travel : - 0.4..0.6 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : - 0.3..0.70 '
difference mm: -

SP press.-dif.measurement:

pompa di mandata (FP):
1st speed 1/min: 1250

H15

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.5
MS mm: 1.1...1.5
SVS max. mm: 2.0
LDA stroke mm: LD =
HBA stroke mm: 7,5...8.5

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2.4 S7
Edition : 11.11.92
replaces : 03.02.92
Calibrating oil : ISO-4113

Injection pump : VE5/8F2100L358
Type number : 0 460 485 003

Customer-specific information
Customer : VW

Engine : 153-2.4L.-T4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 1.5...1.9
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5,7...6,3

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 36,0...37,0

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,0
1000S.: (3,0)

Low-idle speed regulation

Speed 1/min: 415
Del. quantity cm3/
1000S.: 7.00...9.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,0

Residual-Delivery Setting

Speed 1/min: 540
Del. quantity cm3/
1000S.: 6,5...7,5

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
1000S.: 10.00...14,00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: 3.5...9.5 *

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1.Speed 1/min: 1500
TD-travel
difference mm: 0.3...0.5 *

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100
TD travel mm: 5,30...6,10
mm: (5,00...6,40)
electromagnet Volt: 12
2nd speed 1/min: 1790
TD travel mm: 4,60...5,40
mm: (4,30...5,70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 1,50...1,90
mm: (1,00...2,40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 3,80...4,40

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 5,70...6,30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2100
Supply-pump pressure bar: 8,10...8,70

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41,70...83,40
(27,80...97,30)

2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55,60...138,90
(41,70...152,90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2600
Shutoff
electromagnet Volt: 12

H17

Del. quantity cm³/: 0,00...6,00
1000S.: -

2nd speed 1/min: 2400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10,00...14,00
1000S.: (8,00...16,00)

3rd speed 1/min: 2300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17,00...27,00
1000S.: (16,00...28,00)

4th speed 1/min: 2100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29,50...31,50
1000S.: (28,30...32,70)

5th speed 1/min: 1250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36,00...37,00
1000S.: (34,30...38,70)

6th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,30...35,30
1000S.: (30,80...36,80)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 415
Del. quantity cm³/: 0,00...3,00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7,00...9,00
1000S.: (4,00...12,00)

Residual:

1. Rotacao 1/min: 540
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6,50...7,50
1000S.: (5,00...9,00)

2nd speed 1/min: 490

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6,80...8,80
1000S.: (5,30...10,30)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : MAX. ...3,00 #
difference 1000S.: -
Shutoff
electromagnet volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0,90...1,30 #
difference mm: (0,50...1,70)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0,80...1,20
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35,00...85,00
1000S.: -

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17,00...37,00
1000S.: -

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35,00...85,00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: K-OT
MS mm: 1,2...1,6
SVS max. mm: 2,4

Remarks:

H18

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 12.02.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2200L153-2
Type number : 0 460 494 303
Customer Part-No. :

Customer-specific information
Customer : RNJR

Engine : J8S

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 47.00...48.00

Shutoff
electromagnet Volt: 12
Dispersion cm³:/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 37.00...38.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm³/
1000S.: 7.00...11.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 800
Del. quantity cm³/
1000S.: 23.00...29.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...80.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)
electromagnet Volt: 12.0

2nd speed 1/min: 1400
Charge press hPa: 800
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1800
Charge press hPa: 800
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.2...7.0
mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: -
Supply-pump pressure bar: 2.60...3.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 800
Supply-pump pressure bar: 5.10...5.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Over-flow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12.0
Overflow quantity cm³/10s: 41.70...83.40
cm³/10s: (26.70...98.40)

2nd speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600
Charge-air pressure-setting point hPa: 200
LDA-stroke mm: 4.5

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 41.00...42.00
cm³/1000S.: (38.50...44.50)

3rd speed 1/min: 2700
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
cm³/1000S.: -

4th speed 1/min: 2500
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/1000S.: 2.50...17.50
cm³/1000S.: -

5th speed 1/min: 2400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/1000S.: 23.00...29.00
cm³/1000S.: (22.00...30.00)

6th speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/1000S.: 43.40...45.40
cm³/1000S.: (42.10...46.70)

7th speed 1/min: 1400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/1000S.: 47.00...48.00
cm³/1000S.: (45.20...49.80)

8th speed 1/min: 1000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 44.90...47.90
cm³/1000S.: (43.40...49.40)

9th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 37.00...38.00
cm³/1000S.: (34.50...40.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/1000S.: 0.00...3.00
cm³/1000S.: (0.00...3.00)

Shutoff
electromagnet Volt: -

Idle delivery:

1st speed 1/min: 425

Shutoff
electromagnet volt: 12
Del. quantity cm³/: 7.00...11.50
1000S.: (5.00...13.00)

Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 520

Shutoff
electromagnet volt: 12
Del. quantity cm³/: 3.00...7.00
1000S.: (1.00...9.00)

3rd speed 1/min: 660

Shutoff
electromagnet volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff
electromagnet volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: -

2nd speed 1/min: 180

Shutoff
electromagnet volt: 12.0
Del. quantity cm³/: 40.00...100.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.3...1.7
SVS max. mm: 3.0
LDA stroke mm: 4.5

Remarks:

:
:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 15.02.93
replaces : 13.04.92
Calibrating oil : ISO-4113
Injection pump : VE4/9F2100R471
Type number : 0 460 494 308
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1,9 L UD T4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 43.00...44.00
Shutoff
electromagnet Volt: 12.0
Dispersion cm3/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 7.00...9.00
Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 5.50...6.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 6.00...8.00 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.70...2.30)
electromagnet Volt: 12.0
2nd speed 1/min: 1250
TD travel mm: 3.70...4.10
mm: (3.10...4.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1700
TD travel mm: 5.60...6.40
mm: (5.20...6.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1700
Supply-pump
pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 1850
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...153.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650
Shutoff
electromagnet volt: 12.0
Del. quantity cm³/: 0.00...3.00
1000S.: -
2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (10.00...18.00)
3rd speed 1/min: 2250
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 25.00...35.00
1000S.: (24.00...36.00)
4th speed 1/min: 1850
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 41.1...43.10
1000S.: (39.90...44.30)
5th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.00...44.00
1000S.: (41.30...45.70)
6th speed 1/min: 750
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 34.30...37.30
1000S.: (32.80...38.80)
7th speed 1/min: 450
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 32.30...38.30
1000S.: (29.80...40.80)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...6.50
1000S.: (4.00...8.00)

2nd speed 1/min: 515
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...7.50
1000S.: (4.00...9.00)

Load-dependent start of delivery:
Inj.-qty. dif. measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : - 7.0..13.0 "
difference 1000S.: -

Shutoff
electromagnet Volt: 12.0
2nd speed 1/min: 1250
Inj.-qty. cm³/: MAX.
difference 1000S.: 0.00...3.00 "

Shutoff
electromagnet Volt: 12.0
3rd speed 1/min: 1250
Inj.-qty. cm³/: ALFB: 0..0.6
difference 1000S.: -

KSB/AFB
valve Volt: 12.0
Shutoff
electromagnet Volt: 12.0

TD-travel dif. measurement:

correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : - 0.9...1.1 "
difference mm: (0.30...0.50)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : - 1.3...1.7 "
difference mm: -

Shutoff
electromagnet Volt: 12.0

SP press.-dif. measurement:

pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : - 0.7...1.1 "
difference bar: -

Shutoff
electromagnet Volt: 12.0

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.1...5.5
MS mm: 1.2...1.4

Remarks:

:
:

Following pump adjustment, screw out
residual-quantity adjusting screw 2 mm.

On initial measurement, screw in
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column *

Test sheet : FIA
Edition : 12.02.93
replaces : 13.04.92
Calibrating oil : ISO-4113
Injection pump : VE4/9F205UR476
Type number : O 460 494 317
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.97.2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1000
Setting value mm: 5.10...5.50
Shutoff
electromagnet Volt: 12

H25

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1000
Setting value bar: 6.10...6.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 67.50...68.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 41.50...42.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 10,5...14,5

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2,5
1000S.: -

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 0.50...5.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 35.00...41.00

Shutoff
electromagnet Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...74.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: - 19.0...21.0 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Charge press hPa: 1000
Supply pump
pressure
difference bar: -0.10...0.30#
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
Charge press hPa: 1000
TD travel mm: 8.10...8.90
mm: (7.80...9.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 1000
TD travel mm: 5.10...5.50
mm: (4.80...5.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2050
Charge press. hPa: 1000
TD travel mm: 9.60...10.40
mm: (9.30...10.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.10...3.70
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1400
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.10...6.70
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2050
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.40...9.00
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600
Charge-air pressure-setting
point hPa: 350*
LDA-stroke mm: 4,5
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 47.50...48.50
1000S.: (45.50...50.50)

2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 2400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...41.00
1000S.: (34.00...42.00)

9th speed 1/min: 2050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 68.00...71.00
1000S.: (67.30...71.70)

12th speed 1/min: 1200
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.50...68.50
1000S.: (66.00...70.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 41.50...42.50
1000S.: (39.50...44.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.50...14.50
1000S.: (9.50...15.50)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (10.00...16.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.50...5.50
1000S.: -
Del. quantity cm³/: 0.00...2.00

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/ : -18.0...26.0"
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000

Charge press. hPa: 1000
Inj.-qty. cm³/: MAX.
difference 1000S.: 4.00...9.00
Shutoff
electromagnet Volt: 12.0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : -0.70...0.90"
difference mm: -
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : -1,10...1.9 "

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...24.00
1000S.: (20.50...25.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...74.00
1000S.: (50.00...74.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...48.00
1000S.: (36.00...48.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...74.00
1000S.: (50.00...74.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5
LDA stroke	mm: 4.5

Adjustment Potentiometer:

Angle for pot.	°: 25
Supply voltage pot.	volt: 5.0
Output volt pot.	volt: 2.1

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 12.02.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R309-3
Type number : 0 460 494 324
Customer Part-No. :

Customer-specific information
Customer : REN

Engine : J8S R21 EURO 93

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 36.20...37.20

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 6.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00

Shutoff
electromagnet Volt: 12.0

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Inj.-qty. cm3/
difference 1000S.: 10.00...12.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1125

Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)
electromagnet Volt: 12.0
2nd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.20...37.20
1000S.: (34.40...39.00)

2nd speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.70...36.70
1000S.: (32.9...37.50)

3rd speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.90...36.90
1000S.: (33.60...38.20)

4th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.20...37.20
1000S.: (33.90...38.50)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.0
1000S.: (19.00...27.00)

6th speed 1/min: 2650
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 2.50...10.5
1000S.: (1.50...11.50)

7th speed 1/min: 2750
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 0.00...5.00
1000S.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet Volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 6.00...10.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 2.00...6.00
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/ : 11.0...15.0 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Inj.-qty. cm³/: MAX.
difference 1000S.: 2.00...8.00 '
Shutoff
electromagnet Volt: 12.0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

1st speed 1/min: 1125
TD-travel : 0.50...0.70 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
TD-travel : 1.10...1.50 '
difference mm: -
Shutoff
electromagnet Volt: 12.0

Automatic starting fuel delivery:

1st speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: -

2nd speed 1/min: 210
Shutoff
electromagnet Volt: 12.0
Del. quantity cm³/: 45.00...85.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 3.0

Remarks:

:
:
On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 c7
 Edition : 08.10.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 936
 Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M64-14
 Governor no. : 0 420 021 142

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1-2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.55...0.65

100 s: (0.45...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

Remarks:

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = 19.3°...19.7°

(19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 c7
 Edition : 27.10.92
 Replaces : 08.10.91
 Test oil : ISO-4113
 Combination no. : 0 400 075 936
 Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M64-14
 Governor no. : 0 420 021 142

Cust. part no. : T4

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.55...0.65

100 s: (0.45...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.4

Testing:

Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4,2...4,4
: (4,1...4,5)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.10...13.30
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.20
2nd pressure hPa : 750
Rack travel in m: 5.70...6.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm3/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.5...6.5
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12,6...14,0)
Del.quantity cm3/ : -
1000 s: (41,0...49,0)
Current A : 1,8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0

Starting test

Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52,0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°

(19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position: 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 936
 Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M64-14
 Governor no. : 0 420 021 142

Cust. part no. : T8

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 688 901 111

Opening
 pressure, bar : 144...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.2...5.3

100 s: (5.1...5.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.65...0.75

100 s: (0.55...1.0)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 52.5...53.5

1000 : (51.5...54.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.4

Testing:

Speed rpm : 220
Minimum rack travel: 8.00
Speed rpm : 315
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4,2...4,4
 : (4,1...4,5)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.10...13.30
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000
1st pressure hPa : 1050
Rack travel in m: 3.90...4.20
2nd pressure hPa : 750
Rack travel in m: 5.70...6.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 51.0...52.5
 1000 s: (50.0...53.5)
Spread cm³ : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³/ : 48.5...50.5
 1000 s: (47.5...51.5)
Spread cm³ : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 34.0...35.0
 1000 s: (33.0...36.0)
Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 53.0...0.0
 1000 s: (53.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 6.5...7.5
 1000 s: (5.5...10.0)
Spread cm³ : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12,6...14,0)
Del.quantity cm³/ : -
 1000 s: (42,0...50,0)
Current A : 1,8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 53,0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7°

(19.2°...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEF-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

RWG adjustment

At engine speed of 1000 1/min set delivery rate of 25.0...26.0 (24.0...27.0) ccm/1000 strokes with control lever. Shift RWG until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws to 1...2 Nm. Move control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35.5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C2
 Edition : 14.10.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 937
 Injection pump
 Pump designation : PESSM55C32ORS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M74
 Governor no. : 0 420 021 140

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temperature °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.5...0.6

100 s : (0.4...0.85)

Spread cm³ : 0.1

100 s : (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

Remarks:

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 345$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position $35,5^\circ$, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position $33,0^\circ$,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At $n =$
1000 min⁻¹,
 $I = 2.5$ A, difference in delivery
referenced to full-load
delivery (4.4...6.4) ccm/1000 strokes.

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19,3^\circ \dots 19,7^\circ$
($19,2^\circ \dots 19,8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Spring-retainer setting: at 1000 min⁻¹
= 1.7...1.8 mm

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Testing and adjusting the control-rod- travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.472...2.532
(2.442...2.562) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 23.0...24.0 (22.0...25.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1,633 \dots 1,639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C2
 Edition : 28.10.92
 Replaces : 14.10.91
 Test oil : ISO-4113

Combination no. : 0 400 075 937

Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M74
 Governor no. : 0 420 021 140

Cust. part no. : T4

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.85)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5.4

Testing:

Speed rpm : 150
Minimum rack travel: 10.0+1
Speed rpm : 345
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4.2...4.4
: (4.1...4.5)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.10...13.30
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.20
2nd pressure hPa : 750
Rack travel in m: 5.70...6.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.5)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 345
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.0...8.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 370
Rack travel in mm : (10.0...11.4)
Del.quantity cm³/ : -
1000 s: (31,5...39,5)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0 1.8A

Remarks:

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 345$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position $35,5^\circ$, max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

-Control-lever position $33,0^\circ$,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

ADJUSTMENT OF ACTIVE BUCKING DAMPING
(ARD)

Control lever on full-load stop. At $n =$
1000 min. -1 ,

$I = 2.5$ A, difference in delivery
referenced to full-load
delivery (4.4...6.4) ccm/1000 strokes.

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19,3^\circ \dots 19,7^\circ$
($19,2 \dots 19,8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 28.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 937
 Injection pump
 Pump designation : PESSM55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M74
 Governor no. : 0 420 021 140

Cust. part no. : T8

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-Abgasl.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 5.2...5.3

100 s : (5.1...5.4)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.6...0.7

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 52.5...53.5

1000 : (51.5...54.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,1...8,5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12 FD<270
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5.4

Testing:

Speed rpm : 150 *
Minimum rack trave: 10,0+1
Speed rpm : 345
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack trave: 1.80

LOW IDLE 2

Control lever

position degrees: 8-12FD 270
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5.3...5.5

Testing:

Speed rpm : 220
Rack travel in mm : 8,0**
Speed rpm : 345
Rack travel in mm : 5,3...5,5
Speed rpm : 540
Rack travel in mm : 2,5
Speed rpm : 640
Rack travel in mm : 2,5

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4.2...4,4
: (4,1...4,5)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.10...13.30
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050

J20

Rack travel in m: 3.90...4.20
2nd pressure hPa : 750
Rack travel in m: 5.70...6.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 51.0...52.5
1000 s: (50.0...53.5)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 34.0...35.0
1000 s: (33.0...36.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 53.0...0.0
1000 s: (53.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 345
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 6.0...7.0
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 370
Rack travel in mm : (10,0...11,4)
Del. quantity cm³/ : -
1000 s : (32,5...40,5)
Current A : 1,8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s : 53,0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction

ad

allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 42,0°,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At n = 345 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Testing and adjusting the control-rod-

travel sensor with evaluation circuit
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.472...2.532
(2.442...2.562) V must be displayed
on the digital voltmeter.

RWG adjustment

At engine speed of 1000 1/min
set delivery rate of 25.0...26.0
(24.0...27.0) ccm/1000 strokes
with control lever. Shift RWG until
U = 1.633...1.639 (1.635...1.637)V
is indicated. Tighten fastening
screws to 1...2 Nm. Move control
lever to full-load stop; voltage
value of 2.472...2.532 V must be
attained.

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At n = 1000 min. -1

I = 2.5 A, difference in delivery referenced to
delivery (5.6...7.6) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C10
 Edition : 13.11.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 944
 Injection pump
 Pump designation : PES5M55C32ORS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300M64-12
 Governor no. : 0 420 021 127

Customer-spec. information

Customer : MB-PKW
 Engine : OM602A-USA MJ90

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 469 990 351
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288
 Tolerance + - ° : 0.00 (1.00)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 14.00...14.10
 Del.quantity cm³/ : 5.1...5.2
 100 s: (5.0...5.3)
 Spread cm³ : 0.2
 100 s: (0.3)

2nd speed rpm : 315.0
 Rack travel in mm : 6.0...6.2
 Del.quantity cm³/ : 0.5...0.6
 100 s: (0.4...0.8)
 Spread cm³ : 0.1
 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1850
 Del.quantity : 51.0...52.0
 1000 : (50.0...53.0)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 8.7...9.1
 Speed rpm : 2500
 4th rack travel in: 2950
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever
 position degrees: 8...12
 Setting point w/out bumper spring

Speed rpm : 315
Rack travel in mm : 6.1

Testing:

Speed rpm : 220
Minimum rack travel: 8.00
Speed rpm : 315
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.50
Speed rpm : -
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4,7...4,9
: (4,6...5,0)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 14.00...14.10
2nd speed rpm : 1600
Rack travel in m: 13.30...13.50
3rd speed rpm : 2200
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del. quantity cm³/ : 49.5...51.0
1000 s: (48.5...52.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200
Del. quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)

Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del. quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 52.0
1000 s: -
Rack travel in mm : 20.1

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.70...9.10
Del. quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 6.00...6.20
Del. quantity cm³/ : 5.0...6.0
1000 s: (4.0...8.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12,8...14,2)
Del. quantity cm³/ : -
1000 s: (41,0...49,0)
Current A : 1,8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current short-duration A : 3,0
Starting test
Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 42,0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Testing and adjusting the control-rod-travel sensor with evaluation circuit R2.1.3

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 2.095...2.105$ (2.098...2.102) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-

load stop; voltage value of 3.230...3.310 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C10
 Edition : 14.10.91
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 075 944

Injection pump
 Pump designation : PESSM55C320RS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300F64-12
 Governor no. : 0 420 021 127

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-USA MJ90

1st version kw : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.85)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1.7...1.8

LOW IDLE 1
 Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.7

Testing:

Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 5.60...5.80
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4.7...4.9
 : (4.6...5.0)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 13.00...13.20
3rd speed rpm : 2200
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 49.5...51.0
 1000 s: (48.5...52.0)
Spread cm3 : 2.50
 1000 s: (3.)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
 1000 s: (47.5...51.5)

Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
 1000 s: (32.0...35.0)
Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 5.0...6.0
 1000 s: (4.0...8.5)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 340
Rack travel in mm : (12.6...14.0)
Del.quantity cm3/ : -
 1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 35.5° , max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 33.0° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

- Control lever at idle stop. With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = $16.8^\circ \dots 17.2^\circ$ ($16.7 \dots 17.3^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

- Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.547 (2.457...2.577) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 18.5...19.5 (17.50...20.5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633 \dots 1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.487...

2.547 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C10
 Edition : 28.10.92
 Replaces : 14.10.91
 Test oil : ISO-4113
 Combination no. : 0 400 075 944
 Injection pump
 Pump designation : PES5M55C320RS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300M64-12
 Governor no. : 0 420 021 127

Cust. part no. : T4

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-USA MJ90

1st version kw : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 5.1...5.2
 100 s : (5.0...5.3)

Spread cm³ : 0.2
 100 s : (0.3)

2nd speed rpm : 315.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm³/ : 0.5...0.6
 100 s : (0.4...0.85)
 Spread cm³ : 0.1
 100 s : (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1850
 Del.quantity : 51.0...52.0
 1000 : (50.0...53.0)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 8.5...8.9
 Speed rpm : 2500
 4th rack travel in: 2950
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1.7...1.8

LOW IDLE 1
 Control lever

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 35,5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

- Control lever at idle stop. With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

- Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.547 (2.457...2.577) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 18.5...19.5 (17.50...20.5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.487...

2.547 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 28.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 944
 Injection pump
 Pump designation : PES5M55C32ORS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300M64-12
 Governor no. : 0 420 021 127

Cust. part no. : T8

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-USA MJ90

1st version kw : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 688 901 111

Opening
 pressure, bar : 144...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

K03

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13,70...13.80

Del.quantity cm³/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 0.6...0.7

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.7...52.7

1000 : (50.7...53.7)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 8,5...8,9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35.5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

RWG adjustment

At engine speed of 1000 1/min set delivery rate of 19.0...20.0 (18.0...21.0) ccm/1000 strokes with control lever. Shift RWG until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws to 1...2 Nm. Move control lever to full-load stop; voltage value of 2.487...2.547 V must be attained.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.547

(2.457...2.577) V must be displayed on the digital voltmeter.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 01.09.92
 Replaces : 14.10.91
 Test oil : ISO-4113

Combination no. : 0 400 076 968

Injection pump
 Pump designation : PES6M55C320RS178
 EP type number : 0 410 056 986
 Governor
 Governor design. : RSF315/2125M64-13
 Governor no. : 0 420 021 128

Customer-spec. information
 Customer : MB-PKW

Engine : OM603A D35 USA ALDA

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

KD6

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 5.8...5.9

100 s : (5.7...6.0)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.6...5.9

Del.quantity cm³/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 58.0...59.0

1000 : (57.0...60.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6.5...6.9

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.60...5.90
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 3,60...3,70
: (3,50...3,80)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 12.70...12.90
3rd speed rpm : 2000
Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.40...0.80

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.50...3.70
2nd pressure hPa : 750
Rack travel in m: 5.00...5.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 54.5...56.0
1000 s: (53.5...57.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2000
Del.quantity cm³/ : 49.0...51.0
1000 s: (48.0...52.0)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050

K07

Speed rpm : 1000
Del.quantity cm³/ : 38.0...39.0
1000 s: (37.0...40.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2300
Rack travel in mm : 6.50...6.90
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.60...5.90
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (11,7...13,1)
Del.quantity cm³/ : -
1000 s: (41,0...49,0)
Current A : 1,8

Control lever at full-load stop

Speed rpm : 2700
Rack travel in mm : 0,0...1,0
Current short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52,0 1,8A

Remarks:

Start-of-delivery sensor system:

adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Adjustment of the control-rod travel
sensor

At a speed of 1000 1/min, set fuel
delivery at 22.0...23.0 (21.0...24.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633...1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

Testing and adjusting the control-rod-
travel sensor with evaluation circuit
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.457...2.517
(2.427...2.547) V must be displayed
on the digital voltmeter.

Sliding sleeve pre-travel = 5.5 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 42,0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 29.10.92
 Replaces : 01.09.92
 Test oil : ISO-4113

Combination no. : 0 400 076 968

Injection pump
 Pump designation : PES6M55C320RS178
 EP type number : 0 410 056 986
 Governor
 Governor design. : RSF315/2125M64-13
 Governor no. : 0 420 021 128

Cust. part no. : T4

Customer-spec. information
 Customer : MB-PKW

Engine : DM603A D35 USA ALDA

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

K09

Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 5.8...5.9
 100 s: (5.7...6.0)

Spread cm³ : 0.2
 100 s: (0.3)

2nd speed rpm : 290.0
 Rack travel in mm : 5.6...5.9
 Del. quantity cm³/ : 0.5...0.6
 100 s: (0.5...0.9)

Spread cm³ : 0.1
 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1850
 Del. quantity : 58.0...59.0
 1000 : (57.0...60.0)

Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 6.5...6.9
 Speed rpm : 2300
 4th rack travel in: 2700
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1,4...1,5

LOW IDLE 1
 Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 290
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack trave: 7.00
Speed rpm : 290
Rack travel in mm : 5.60...5.90
Speed rpm : 1000
Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 3,60...4,10
 : (3,50...4,20)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 12.70...12.90
3rd speed rpm : 2000
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.40...0.80

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.50...3.70
2nd pressure hPa : 750
Rack travel in m: 5.00...5.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 54.5...56.0
 1000 s: (53.5...57.0)
Spread cm³ : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2000
Del.quantity cm³/ : 49.0...51.0
 1000 s: (48.0...52.0)

Spread cm³ : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 38.0 ..39.0
 1000 s: (37.0...40.0)
Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2300
Rack travel in mm : 6.50...6.90
Del.quantity cm³/ : 22.0...26.0
 1000 s: (21.0...27.0)
Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.60...5.90
Del.quantity cm³/ : 5.5...6.5
 1000 s: (5.0...9.5)
Spread cm³ : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE
REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (11,7...13,1)
Del.quantity cm³/ : -
 1000 s: (41,0...49,0)
Current A : 1,8

Control lever at full-load stop

Speed rpm : 2700
Rack travel in mm : 0,0...1,0
Current short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52,0 1,8A

Remarks:

:
Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

* RWG testing and adjustment with evaluation circuit KDEP-P400

Incoming inspection

Position control lever against
full-load stop. Set 13.5 V on
regulator. Apply 1850 hPa to ALDA.
Approach engine speed of 1000 1/min;
in doing so, digital voltmeter must
indicate a voltage of 2.432...2.502
(2.462...2.482) V.

RWG adjustment

At engine speed of 1000 1/min
set delivery rate of 22.0...23.0
(21.0...24.0) ccm/1000 strokes
with control lever. Shift RWG until
 $U = 1.633...1.639$ (1.635...1.637)V
is indicated. Tighten fastening
screws to 1...2 Nm. Move control
lever to full-load stop; voltage
value of 2.432...2.502 V must be
attained.

Sliding sleeve pre-travel = 5.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 42,0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 26.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 411
 Injection pump
 Pump designation : PES6A100D410RS2762-1
 EP type number : 0 410 806 008
 Governor
 Governor design. : RSV425...1100AOC2252
 -2L
 Governor no. : 0 420 232 591

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076ADW-30

1st version kW : 135.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00x2.00x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.10...11.20
 Del. quantity cm³/ : 10.4...10.6
 100 s: (10.2...10.8)
 Spread cm³ : 0.4
 100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 6.0...6.2
 Del. quantity cm³/ : 3.1...3.5
 100 s: (2.9...3.7)
 Spread cm³ : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 104.5...106.5
 1000 : (102.5...108.5)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 45...53

Testing:

1st rack travel in: 10.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.10...11.20
2nd speed rpm : 700
Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 141.0...145.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 6.00...6.20
Del. quantity cm³/ : 31.0...35.0
1000 s: (29.0...37.0)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE55529
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 v
 Edition : 27.05.91
 Replaces : 06.90
 Test oil : ISO-4113

Combination no. : 0 402 036 738

Injection pump
 Pump designation : PES6P120A720/3LS3254
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQV300...950PA959
 Governor no. : 0 421 813 860

Customer-spec. information
 Customer : MAN

Engine : D2866LFD2

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4
 100 s: (23.9...24.7)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 9.70...9.90
 2nd speed rpm : 300
 travel mm : 0.90...1.10
 3rd speed rpm : 500
 travel mm : 3.40...4.00
 4th speed rpm : 750
 travel mm : 6.60...7.00
 5th speed rpm : 1250
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1025
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200

Del. quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 298...306

Testing:

1st rack travel in: 13.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 254...262

Testing:

Speed rpm : 200
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 320...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

K15

Aneroid pressure h: 1200
Speed rpm : 950
Del. quantity cm³/ : 228.0...234.0
1000 s: (225.0...237.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 215.0...235.0
1000 s: (211.0...239.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...5.10
Del. quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7942

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,0 h2
 Edition : 26.02.93
 Replaces : 02.89
 Test oil : ISO-4113
 Combination no. : 0 402 648 839
 Injection pump
 Pump designation : PE8P120A920/4LS7125T
 EP type number : 0 412 628 824
 Governor
 Governor design. : RQV200...950PA736-1
 Governor no. : 0 421 813 551

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC14 03

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

K16

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.80...13.90
 Del.quantity cm³/ : 22.1...22.3
 100 s : (21.8...22.6)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm³/ : 1.6...2.0
 100 s : (-)
 Spread cm³ : 0.3
 100 s : (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 650
 travel mm : 4.40...5.00
 4th speed rpm : 995
 travel mm : 7.70...7.90
 5th speed rpm : 1125
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1040
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 221.0...223.0
 1000 : (218.0...226.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Testing:
1st rack travel in: 12.80
Speed rpm : 990...1030
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 40...48

Testing:
Speed rpm : 125
Minimum rack travel: 6.00
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.60
2nd pressure hPa : 365
Rack travel in m: 12.80...12.90
3rd pressure hPa : 215
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 211.0...219.0
1000 s: (209.0...221.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 m1
 Edition : 26.02.93
 Replaces : 02.90
 Test oil : ISO-4113
 Combination no. : 0 402 648 868
 Injection pump
 Pump designation : PE8P120A920/4LS7180
 EP type number : 0 412 628 837
 Governor
 Governor design. : RQV350...1050PA795-8
 Governor no. : 0 421 813 770

Customer-spec. information
 Customer : SCANIA

Engine : DSI 14

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.20...13.30
 Del.quantity cm³/ : 26.8...27.0
 100 s: (26.5...27.3)
 Spread cm³ : 0.7
 100 s: (1.0)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 650
 travel mm : 4.10...4.70
 4th speed rpm : 1145
 travel mm : 7.80...8.00
 5th speed rpm : 1255
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1325
 Rack travel in mm : 6.00...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 268.0...270.0
 1000 : (265.0...273.0)
 Spread cm³ : 7.00
 1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 250
Minimum rack travel: 6.00
Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...10.10
2nd pressure hPa : 365
Rack travel in m: 11.80...11.90
3rd pressure hPa : 215
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1050
Del.quantity cm3/ : 258.0...266.0
1000 s: (256.0...268.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...150.0
1000 s: (-)
Rack travel in mm : 9.70...10.10

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 o
 Edition : 26.02.93
 Replaces : 10.92
 Test oil : ISO-4113

Combination no. : 0 402 648 891

Injection pump
 Pump designation : PE8P120A920/4LS7189Q
 EP type number : 0 412 628 858
 Governor
 Governor design. : RQV200...950PA736-8
 Governor no. : 0 421 813 815

Customer-spec. information
 Customer : SCANIA

Engine : DSC14 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 2.30

Overflow
 quantity min. 1/h: 170...0

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 21.9...22.1
 100 s: (21.6...22.4)

Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.8
 Del. quantity cm³/ : 1.2...1.6
 100 s: (-)
 Spread cm³ : 0.4
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.40...1.80
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 650
 travel mm : 4.40...5.00
 4th speed rpm : 995
 travel mm : 7.70...7.90
 5th speed rpm : 1115
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 900
Del. quantity : 219.0...221.0
1000 : (216.0...224.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:
1st rack travel in: 11.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 41...49

Testing:
Speed rpm : 150
Minimum rack travel: 5.80
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 375...435

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 525
Rack travel in m: 11.70...11.80
3rd pressure hPa : 320
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del. quantity cm³/ : 202.0...210.0
1000 s: (200.0...212.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...180.0
1000 s: (-)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 08.92
 Test oil : ISO-4113

Combination no. : 0 402 648 895X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA972-1
 Governor no. : 0 421 801 545

Cust. part no. : 0180742102

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...1.90

2nd speed rpm : 510

travel mm : 5.90...6.10

3rd speed rpm : 845

travel mm : 6.30...6.50

4th speed rpm : 1109

travel mm : 6.70...6.90

5th speed rpm : 1270

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1200
Del. quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 11.20...11.30
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f
 Edition : 01.03.93
 Replaces : 01.93
 Test oil : ISO-4113
 Combination no. : 0 402 648 912
 Injection pump
 Pump designation : PE8P130A920/5LS7841
 EP type number : 0 412 638 803
 Governor
 Governor design. : RQV300...950PA994K
 Governer no. : 0 421 815 275

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.50...12.50
 & maximum rack tra: 21.00

Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.4

Del. quantity cm³/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm³ : 0.5

100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995

travel mm : 9.60...9.80

2nd speed rpm : 300

travel mm : 2.50...2.70

3rd speed rpm : 500

travel mm : 4.10...4.70

4th speed rpm : 700

travel mm : 5.90...6.50

5th speed rpm : 1250

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 170...290

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 10.50...10.60
2nd speed rpm : 950
Rack travel in m: 10.40...10.60
3rd speed rpm : 700
Rack travel in m: 10.40...10.70
4th speed rpm : 350
Rack travel in m: 10.00...10.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 360
Rack travel in m: 9.70...9.80
3rd pressure hPa : 260
Rack travel in m: 8.10...8.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 214.0...220.0
1000 s: (211.0...223.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm³/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm³ : 5.00
1000 s: (9.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 01.03.93
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 913
 Injection pump
 Pump designation : PE8P130A920/5LS7841
 EP type number : 0 412 638 803
 Governor
 Governor design. : RGV250...950PA994-1K
 Governor no. : 0 421 815 276

Customer-spec. information
 Customer : IVECO-FIAT
 Engine : 8280.42.350 SPR

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 11.50...12.50

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.50...12.50
 & maximum rack tra: 21.00
 Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 10.90...11.00
 Del. quantity cm³/ : 22.1...22.3
 100 s: (21.8...22.6)
 Spread cm³ : 0.8
 100 s: (1.2)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.0...4.4
 Del. quantity cm³/ : 2.2...2.8
 100 s: (1.9...3.1)
 Spread cm³ : 0.5
 100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 9.60...9.80
 2nd speed rpm : 300
 travel mm : 2.50...2.70
 3rd speed rpm : 500
 travel mm : 4.10...4.70
 4th speed rpm : 700
 travel mm : 5.90...6.50
 5th speed rpm : 1250
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1070
 Rack travel in mm : 9.10...11.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h : 900
Del. quantity : 221.0...223.0
1000 : (218.0...226.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 10.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 170...290

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 10.90...11.00
2nd speed rpm : 950
Rack travel in m: 11.60...11.80
3rd speed rpm : 700
Rack travel in m: 11.30...11.60
4th speed rpm : 400
Rack travel in m: 10.50...10.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 7.80...8.00
2nd pressure hPa : 450
Rack travel in m: 11.20...11.30
3rd pressure hPa : 280
Rack travel in m: 8.70...9.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del. quantity cm³/ : 247.0...254.0
1000 s: (244.0...257.0)
Aneroid pressure h: -
Speed rpm : 550
Del. quantity cm³/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del. quantity cm³/ : 22.0...28.0
1000 s: (19.0...31.0)
Spread cm³ : 5.00
1000 s: (9.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 08.92
 Test oil : ISO-4113

Combination no. : 0 402 648 914X

Injection pump
 Pump designation : PE8P120A320LS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQV300...1050PA797
 -30
 Governor no. : 0 421 813 921

Cust. part no. : 0180742202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kw : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 608
 travel mm : 4.80...5.30

3rd speed rpm : 820
 travel mm : 5.90...6.40

4th speed rpm : 1108
 travel mm : 8.10...8.60

5th speed rpm : 1190
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 1130
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1200
Del. quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

L01

1st pressure hPa : 250
Rack travel in m: 11.20...11.30
2nd pressure hPa : 600
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 08.92
 Test oil : ISO-4113

Combination no. : 0 402 648 915X

Injection pump
 Pump designation : PE8P120A32OLS7835-10
 EP type number : 0 412 628 853
 Governor
 Governor design. : RQ300/1050PA993-1
 Governor no. : 0 421 801 582

Cust. part no. : 0200747202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 11.20...11.30
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 929A
 Injection pump
 Pump designation : PE8P120A320LS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQV300...950PA1033-1
 Governor no. : 0 421 813 991

Cust. part no. : 0230741402

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

L04

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 23.3...23.5
 100 s : (23.0...23.8)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s : (0.7...1.9)
 Spread cm³ : 0.8
 100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 300
 travel mm : 1.10...1.50
 2nd speed rpm : 567
 travel mm : 4.40...5.00
 3rd speed rpm : 780
 travel mm : 6.00...6.60
 4th speed rpm : 1010
 travel mm : 8.50...8.70
 5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...13.00
2nd speed rpm : 800
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.90...11.00
2nd pressure hPa : 650
Rack travel in m: 12.40...12.60

L05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 01.93
 Test oil : ISO-4113
 Combination no. : 0 402 648 930
 Injection pump
 Pump designation : PE8P120A32OLS7847
 EP type number : 0 412 628 863
 Governor
 Governor design. : RQ300/1050PA1031-2
 Governor no. : 0 421 801 645

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 23.3...23.5
 100 s: (23.0...23.8)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 233.0...235.0
 1000 : (230.0...238.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 13.40...13.50
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 800
Rack travel in m: 13.40...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 650
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

L07

Speed rpm : 1050
Del.quantity cm3/ : 206.0...209.0
1000 s: (203.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 26.02.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 943

Injection pump
 Pump designation : PE8P120A920/4LS7189
 EP type number : 0 412 628 840
 Governor
 Governor design. : RQV350...1050PA795
 -14
 Governor no. : 0 421 814 020

Customer-spec. information
 Customer : SCANIA

Engine : D5C14

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.30

Overflow
 quantity min. 1/h: 170...0

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

L08

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 Phasing : 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.8...2.4
 100 s: (-)
 Spread cm³ : 0.4
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 650
 travel mm : 4.10...4.70
 4th speed rpm : 1095
 travel mm : 7.80...8.00
 5th speed rpm : 1215
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500

Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 250
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 375...435

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 525
Rack travel in m: 11.70...11.80
3rd pressure hPa : 320
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 195.0...203.0
1000 s: (193.0...205.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (-)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 948A
 Injection pump
 Pump designation : PE8P120A320LS7859
 EP type number : 0 412 628 869
 Governor
 Governor design. : RQ300/1050PA1030-7
 Governor no. : 0 421 801 669

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 294.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.30...10.40
2nd pressure hPa : 550
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 203.0...207.0
1000 s: (200.0...210.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

L11

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...95.0
1000 s: (61.0...99.0)
Rack travel in mm : 9.40...9.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 951
 Injection pump
 Pump designation : PE8P120A320LS7840-1
 EP type number : 0 412 628 862
 Governor
 Governor design. : RQV350...1050PA1053
 Governor no. : 0 421 814 038

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 80...100

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.00...1.50

2nd speed rpm : 453
 travel mm : 2.30...2.80

3rd speed rpm : 770
 travel mm : 4.70...5.20

4th speed rpm : 1108
 travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 250
Minimum rack travel: 9.90
Speed rpm : 350
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 380...500

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 13.30...13.40
2nd speed rpm : 1030
Rack travel in m: 12.70...12.90
3rd speed rpm : 825
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 700

Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1030
Del. quantity cm³/ : 192.0...196.0
1000 s: (189.0...199.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 1030
Del. quantity cm³/ : 143.0...147.0 *
1000 s: (140.0...150.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.02.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 952
 Injection pump
 Pump designation : PE8P120A320LS7856
 EP type number : 0 412 628 867
 Governor
 Governor design. : RQV350...1050PA1051
 -1
 Governor no. : 0 421 814 039

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 60...80
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1
 Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.20...13.30
 Del.quantity cm³/ : 23.8...24.0
 100 s: (23.5...24.3)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 4.3...4.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.00...1.50
 2nd speed rpm : 453
 travel mm : 2.30...2.80
 3rd speed rpm : 770
 travel mm : 4.70...5.20
 4th speed rpm : 1108
 travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1170
 Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 11.90
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:
Speed rpm : 250
Minimum rack travel: 7.80
Speed rpm : 350
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 600
Rack travel in m: 13.20...13.30
2nd speed rpm : 1050
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.00...10.10
2nd pressure hPa : 600
Rack travel in m: 11.70...11.90

L15

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del. quantity cm³/ : 222.0...226.0
1000 s: (219.0...229.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1000
Speed rpm : 1050
Del. quantity cm³/ : 166.0...170.0 *
1000 s: (163.0...173.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.02.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 676 814
 Injection pump
 Pump designation : PE6P120A320LS7861
 EP type number : 0 412 626 876
 Governor
 Governor design. : RSV350...1050POA535
 -7
 Governor no. : 0 421 833 386

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.4

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1200

Del. quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 95...103

Testing:
1st rack travel in: 11.40
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1145...1163
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.80...5.40
Rack travel in mm : 2.00
Speed rpm : 370...430

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.50

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 450
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del. quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

:
Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 6
 Edition : 26.02.93
 Replaces : 05.92
 Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964
 -4K
 Governor no. : 0 421 815 256

Customer-spec. information
 Customer : CDC

Engine : 6CTA-A

1st version kw : 156.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 14.7...14.9
 100 s: (14.4...15.2)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm³/ : 2.7...3.3
 100 s: (2.5...3.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1200
Del.quantity : 147.5...149.5
1000 : (144.5...152.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.30
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1365...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.30...12.40
2nd speed rpm : 650
Rack travel in m: 10.90...11.30
3rd speed rpm : 550
Rack travel in m: 10.80...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 1200

1st pressure hPa : -

Rack travel in m: 7.70...8.10
2nd pressure hPa : 225
Rack travel in m: 8.90...9.00
3rd pressure hPa : 575
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 151.0...157.0
1000 s: (148.0...160.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921774

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 26.02.93
 Replaces : 02.93
 Test oil : ISO-4113

Combination no. : 0 402 736 823

Injection pump
 Pump designation : PES6P110A120RS7249
 EP type number : 0 412 716 807
 Governor
 Governor design. : RQV350...1150PA964
 -9K
 Governor no. : 0 421 815 295

Customer-spec. information
 Customer : CDC

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del. quantity cm³/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.70...2.10

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 700
 travel mm : 5.90...6.30

4th speed rpm : 1200
 travel mm : 9.00...9.20

5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 1200
 Del. quantity : 178.0...180.0
 1000 : (175.0...183.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 13.30
Speed rpm : 1200...1210
2nd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.30...14.40
2nd speed rpm : 650
Rack travel in m: 11.60...12.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1150
Pressure hPa : 1200
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 7.90...8.30
2nd pressure hPa : 320
Rack travel in m: 9.60...9.70
3rd pressure hPa : 860
Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 165.5...171.5
1000 s: (162.5...174.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 92.5...96.5
1000 s: (90.5...98.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1200...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.90...11.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 23.5...29.5
1000 s: (21.5...31.5)
Spread cm³ : 7.00
1000 s: (11.00)

Remarks:

: C.D.C. # 3921970

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 01.03.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 831
 Injection pump
 Pump designation : PES6P120A12ORS7261
 EP type number : 0 412 726 876
 Governor
 Governor design. : RQV350...1100PA924
 -8K
 Governor no. : 0 421 815 318

Customer-spec. information
 Customer : CUMMINS

Engine : 6CTAA

1st version kw : 176.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 14.4...14.6

100 s: (14.1...14.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.10...1.50

2nd speed rpm : 550
 travel mm : 3.40...4.00

3rd speed rpm : 900
 travel mm : 6.10...6.70

4th speed rpm : 1150
 travel mm : 8.40...8.60

5th speed rpm : 1250
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 144.0...146.0
1000 : (141.0...149.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:

1st rack travel in: 9.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 250
Minimum rack travel: 6.30
Speed rpm : 350
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.80...10.90
2nd speed rpm : 700
Rack travel in m: 9.90...10.10
3rd speed rpm : 900
Rack travel in m: 10.20...10.50
4th speed rpm : 400
Rack travel in m: 9.00...9.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 560

L24

Rack travel in m: 10.20...10.30
3rd pressure hPa : 320
Rack travel in m: 8.40...8.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del. quantity cm³/ : 151.0...157.0
1000 s: (148.0...160.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 105.0...109.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 250.0...280.0
1000 s: (246.0...284.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.70...4.90
Del. quantity cm³/ : 23.0...29.0
1000 s: (21.0...31.0)
Spread cm³ : 7.00
1000 s: (11.00)

Remarks:

: C.D.C. # 3281841
Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 08.03.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 834
 Injection pump
 Pump designation : PES6P120A120RS7265
 EP type number : 0 412 726 882
 Governor
 Governor design. : RQV350...1100PA964
 -12K
 Governor no. : 0 421 815 323

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kw : 186.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 086

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 3.95...4.05
 : (3.90...4.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 2.10...2.40

2nd speed rpm : 450
 travel mm : 3.20...3.60

3rd speed rpm : 900
 travel mm : 5.60...6.00

4th speed rpm : 1200
 travel mm : 8.10...8.30

5th speed rpm : 1400
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 207.5...209.5
 1000 : (204.5...212.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.50
Speed rpm : 1250...1280
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 275
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.80...13.90
2nd speed rpm : 650
Rack travel in m: 11.90...12.30
3rd speed rpm : 1200
Rack travel in m: 13.50...13.70
4th speed rpm : 750
Rack travel in m: 12.20...12.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 230
Rack travel in m: 10.30...10.40
3rd pressure hPa : 545

L26

Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del. quantity cm³/ : 158.5...164.5
1000 s: (155.5...167.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm³/ : 171.5...177.5
1000 s: (168.5...190.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 59.5...63.5
1000 s: (57.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1250...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...220.0
1000 s: (175.0...225.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Del. quantity cm³/ : 20.0...26.0
1000 s: (18.0...28.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3922471

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 26.02.93
 Replaces : 12.92
 Test oil : ISO-4113
 Combination no. : 0 402 736 836
 Injection pump
 Pump designation : PES6P120A120RS7265
 EP type number : 0 412 726 882
 Governor
 Governor design. : RQV350...1000PA964
 -14K
 Governor no. : 0 421 815 325

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : D 403 510 253
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 90...110
 Test nozzle holder
 assembly : 1 688 901 103
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 3.95...4.05
 : (3.90...4.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 14.50...14.60
 Del.quantity cm³/ : 23.8...24.0
 100 s: (23.5...24.3)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm³/ : 1.8...2.4
 100 s: (1.6...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 600
 travel mm : 5.10...5.50
 4th speed rpm : 1000
 travel mm : 8.10...8.30
 5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1200
 Del.quantity : 238.0...240.0
 1000 : (235.0...243.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.30
Speed rpm : 1140...1170
2nd rack travel in: 4.00
Speed rpm : 1295...1305
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 275
Minimum rack trave: 8.10
Speed rpm : 350
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 13.15...13.55
3rd speed rpm : 1100
Rack travel in m: 14.30...14.50
4th speed rpm : 750
Rack travel in m: 13.40...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 310
Rack travel in m: 11.40...11.50
3rd pressure hPa : 650

Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 211.5...217.5
1000 s: (208.5...220.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 90.5...94.5
1000 s: (88.5...96.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1140...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...220.0
1000 s: (175.0...225.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 18.0...24.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3922427

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i
 Edition : 18.12.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 901
 Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : G 412 726 840
 Governor
 Governor design. : RQV275...1100PA975K
 Governor no. : 0 421 815 266

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.406

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

M01

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.70...12.80
 Del. quantity cm³/ : 21.7...21.9
 100 s: (21.4...22.2)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.0...5.4
 Del. quantity cm³/ : 2.3...2.9
 100 s: (2.0...3.2)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50
 2nd speed rpm : 275
 travel mm : 1.30...1.50
 3rd speed rpm : 450
 travel mm : 3.40...4.00
 4th speed rpm : 750
 travel mm : 5.90...6.30
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del. quantity : 217.0...219.0
 1000 : (214.0...222.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 270...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 900
Rack travel in m: 12.60...12.80
3rd speed rpm : 700
Rack travel in m: 12.00...12.20
4th speed rpm : 500
Rack travel in m: 11.50...11.70
5th speed rpm : 350
Rack travel in m: 11.00...11.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 750

M02

Rack travel in m: 11.30...11.40
3rd pressure hPa : 410
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm³/ : 227.0...233.0
1000 s: (224.0...236.0)
Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm³/ : 240.0...246.0
1000 s: (237.0...249.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 22.01.93
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 931
 Injection pump
 Pump designation : PES6P120A320RS7236
 EP type number : 0 412 726 848
 Governor
 Governor design. : RQV275...1000PA1001
 -2
 Governor no. : 0 421 813 989

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540 N/3

1st version kW : 283.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.20...13.30
 Del. quantity cm³/ : 28.2...28.4
 100 s: (27.9...28.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.3
 Del. quantity cm³/ : 2.8...3.2
 100 s: (2.5...3.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080
 travel mm : 8.40...8.60
 2nd speed rpm : 275
 travel mm : 1.20...1.40
 3rd speed rpm : 490
 travel mm : 3.50...4.10
 4th speed rpm : 775
 travel mm : 5.90...6.30
 5th speed rpm : 1450
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 11.90...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000

Del.quantity : 282.0...284.0
1000 : (279.0...287.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 297...305

Testing:

1st rack travel in: 12.20
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.50
2nd pressure hPa : 480
Rack travel in m: 12.10...12.20
3rd pressure hPa : 240
Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

M04

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 260.0...266.0
1000 s: (257.0...269.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 28.0...32.0
1000 s: (25.0...35.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 26.02.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 935

Injection pump
 Pump designation : PES6P120A32ORS7267
 EP type number : 0 412 726 883
 Governor
 Governor design. : RQV275...1000PA1001
 -3

Governer no. : 0 421 814 025

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540 J/31

1st version kW : 314.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 10.50...11.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

 Rack travel in mm : 12.10...12.20

 Del.quantity cm³/ : 30.9...31.1
 100 s: (30.6...31.4)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm³/ : 3.7...4.1
 100 s: (3.4...4.4)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080
 travel mm : 8.00...8.20
 2nd speed rpm : 275
 travel mm : 1.10...1.40
 3rd speed rpm : 500
 travel mm : 3.50...4.10
 4th speed rpm : 800
 travel mm : 5.80...6.20
 5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1235
 Rack travel in mm : 10.80...13.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000

Del.quantity : 309.0...311.0
1000 : (306.0...314.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 11.10
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 246...254

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 275
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 260...380

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 400
Rack travel in m: 11.40...11.50
3rd pressure hPa : 160
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

MD6

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 292.0...298.0
1000 s: (289.0...301.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 161.0...163.0
1000 s: (158.0...166.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.90
Del.quantity cm3/ : 37.0...41.0
1000 s: (34.0...44.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 18.12.92
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 937
 Injection pump
 Pump designation : PES6P120A720RS7268
 EP type number : 0 412 726 884
 Governor
 Governor design. : RQ275/1100PA915-2
 Governor no. : 0 421 801 671

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.603

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

M07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.50...11.60
 Del.quantity cm³/ : 18.3...18.5
 100 s : (18.0...18.8)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm³/ : 2.0...2.6
 100 s : (1.7...2.9)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 183.0...185.0
 1000 : (180.0...188.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 10.50
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 325...365

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 550
Rack travel in m: 12.00...12.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 310
Rack travel in m: 10.80...10.90
3rd pressure hPa : 240
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 197.0...203.0
1000 s: (194.0...206.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...145.0
1000 s: (111.0...149.0)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 26.02.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 0 402 746 938
 Injection pump
 Pump designation : PES6P120A72ORS7269
 EP type number : 0 412 726 885
 Governor
 Governor design. : RQ310/1025PA872-1
 Governor no. : 0 421 801 672

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.21.313

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 12.00...13.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.40...5.60
 & maximum rack tra: 12.0...13.0
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 1025
 Rack travel in mm : 12.60...12.70
 Del. quantity cm³/ : 19.2...19.4
 100 s: (18.9...19.7)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 310.0
 Rack travel in mm : 5.7...6.1
 Del. quantity cm³/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1025
 Aneroid pressure h: 900
 Del. quantity : 192.0...194.0
 1000 : (189.0...197.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1070...1085
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 310
Rack travel in mm : 5.8

Testing:
Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 310
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 425...465

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1025
Rack travel in m: 13.10...13.20
4th speed rpm : 650
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 310
Rack travel in m: 11.90...12.00
3rd pressure hPa : 240
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 212.0...218.0
1000 s: (209.0...221.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1070...1085

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 105.0...135.0
1000 s: (101.0...139.0)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 940

Injection pump
 Pump designation : PES6P110A320LS7277
 EP type number : 0 412 716 809
 Governor
 Governor design. : RQV350...1000PA1054K
 Governor no. : 0 421 815 337

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-531

1st version kW : 224.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 170...190

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95
 : (2.80...3.00)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.80...14.90

Del. quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.40...1.60

2nd speed rpm : 500
 travel mm : 3.50...3.90

3rd speed rpm : 800
 travel mm : 6.80...7.20

4th speed rpm : 1000
 travel mm : 8.90...9.10

5th speed rpm : 1200
 travel mm : 11.50...11.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 650
 Aneroid pressure h: 1500
 Del. quantity : 234.5...236.5
 1000 : (231.5...239.5)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 14.10
Speed rpm : 1040...1070
2nd rack travel in: 4.00
Speed rpm : 1170...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 15...23

Testing:

Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 14.80...14.90
2nd speed rpm : 1000
Rack travel in m: 15.10...15.30
3rd speed rpm : 500
Rack travel in m: 13.40...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1500
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 9.10...9.40
2nd pressure hPa : 390
Rack travel in m: 10.80...10.90
3rd pressure hPa : 950
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1000
Del.quantity cm³/ : 211.5...217.5
1000 s: (208.5...220.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm³/ : 83.5...87.5
1000 s: (81.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1040...1070

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (135.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1815915C91
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.00...6.10 mm.
Permissible alteration from 5.70...6.30
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 942
 Injection pump
 Pump designation : PES6P120A72CRS7224-1
 EP type number : 0 412 726 889
 Governor
 Governor design. : RQ275/1050PA1021-2
 Governor no. : 0 421 801 676

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.721

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

M13

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 10.80...10.90
 Del. quantity cm³/ : 18.8...19.0
 100 s : (18.5...19.3)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm³/ : 2.0...2.6
 100 s : (1.7...2.9)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 900
 Del. quantity : 188.0...190.0
 1000 : (185.0...193.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 9.80
 Speed rpm : 1095...1110
 2nd rack travel in: 4.00
 Speed rpm : 1170...1200

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.30...11.40
2nd speed rpm : 550
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 430
Rack travel in m: 9.90...10.00
3rd pressure hPa : 250
Rack travel in m: 8.20...8.40

START CUT-OUT

Speed 1/min : 215 (235)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 218.0...224.0
1000 s: (215.0...227.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...160.0
1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 01.03.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 943
 Injection pump
 Pump designation : PES6P120A720RS7224-1
 EP type number : 0 412 726 889
 Governor
 Governor design. : RQ275/1050PA1021-3
 Governor no. : 0 421 801 677

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.731

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

M15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.70...12.80
 Del.quantity cm³/ : 22.2...22.4
 100 s : (21.9...22.7)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 2.0...2.6
 100 s : (1.7...2.9)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del.quantity : 222.0...224.0
 1000 : (219.0...227.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.70
 Speed rpm : 1095...1110
 2nd rack travel in: 4.00
 Speed rpm : 1190...1220

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.20...13.30
2nd speed rpm : 550
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.50...7.70
2nd pressure hPa : 580
Rack travel in m: 11.30...11.40
3rd pressure hPa : 290
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 215 (235)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm³/ : 266.0...274.0
1000 s: (263.0...277.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...160.0
1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 944

Injection pump
 Pump designation : PES6P120A320RS7267
 EP type number : 0 412 726 883
 Governor
 Governor design. : RQV275...1000PA1001
 -4

Governer no. : 0 421 814 045

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540 N/31

1st version kW : 283.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 10.50...11.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 28.2...28.3

100 s: (27.9...28.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.1

Del.quantity cm³/ : 3.1...3.5

100 s: (2.8...3.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080
 travel mm : 8.00...8.20

2nd speed rpm : 275
 travel mm : 1.10...1.30

3rd speed rpm : 500
 travel mm : 3.50...4.10

4th speed rpm : 800
 travel mm : 5.80...6.20

5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1235

Rack travel in mm : 9.70...13.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 282.0...283.0
1000 : (279.0...286.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:

1st rack travel in: 10.70
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 244...252

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 260...380

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.20
2nd pressure hPa : 320
Rack travel in m: 10.90...11.00
3rd pressure hPa : 160
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

M18

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 264.0...270.0
1000 s: (261.0...273.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...160.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : -5.60...-6.00
Del.quantity cm³/ : 31.0...35.0
1000 s: (28.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 h
 Edition : 18.12.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 402 846 052
 Injection pump
 Pump designation : PE6P110A3ZORS8009-1
 EP type number : 0 412 816 011
 Governor
 Governor design. : RQV300...1100PA1017
 Governor no. : 0 421 813 965

Customer-spec. information
 Customer : VME

Engine : TD73KBE

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 078
 Inlet press., bar : 2.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 10.00...10.10
 Del.quantity cm³/ : 16.4...16.6
 100 s : (16.2...16.8)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.2...4.6
 Del.quantity cm³/ : 2.1...2.5
 100 s : (1.8...2.8)
 Spread cm³ : 0.7
 100 s : (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.90...1.30
 2nd speed rpm : 500
 travel mm : 2.60...3.20
 3rd speed rpm : 800
 travel mm : 4.90...5.50
 4th speed rpm : 1150
 travel mm : 8.20...8.40
 5th speed rpm : 1300
 travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1160
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 164.0...166.0
 1000 : (162.0...168.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:

1st rack travel in: 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 300
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

Speed rpm : 300...370

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1000
Pressure hPa : 1200
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 7.60...7.80
2nd pressure hPa : 90
Rack travel in m: 7.80...7.90
3rd pressure hPa : 375
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 116.0...118.0
1000 s: (113.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 846 054
 Injection pump
 Pump designation : PE6P120A32ORS8017
 EP type number : 0 412 826 018
 Governor
 Governor design. : RQV300...1100PA1017
 -1
 Governor no. : 0 421 814 023

Customer-spec. information
 Customer : PENTA

Engine : TWD 1030 ME

1st version kW : 212.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 078

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20
 : (4.05...4.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.50...9.60

Del. quantity cm³/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.5...4.9

Del. quantity cm³/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.20

3rd speed rpm : 800

travel mm : 4.90...5.50

4th speed rpm : 1150

travel mm : 8.20...8.40

5th speed rpm : 1300

travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200
Del. quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 8.50
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 9.50...9.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 6.90...7.10
2nd pressure hPa : 260
Rack travel in m: 7.10...7.20
3rd pressure hPa : 560
Rack travel in m: 8.80...9.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1100

Del. quantity cm³/ : 182.0...188.0
1000 s: (179.0...191.0)
Spread cm³ : 10.00
1000 s: (14.0)
Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 130.5...132.5
1000 s: (127.5...135.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.50
Speed rpm : 1120...1130

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.50...4.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 846 055
 Injection pump
 Pump designation : PE6P110A32ORS8009-1
 EP type number : 0 412 816 011
 Governor
 Governor design. : RQV300...1200PA1043
 Governor no. : 0 421 814 024

Customer-spec. information
 Customer : VME

Engine : TD73KCE

1st version kw : 186.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 078

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 F.ring order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 19.7...19.9

100 s: (19.5...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.7

Del.quantity cm³/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.90...1.30

2nd speed rpm : 500
 travel mm : 2.60...3.20

3rd speed rpm : 800
 travel mm : 4.60...5.30

4th speed rpm : 1250
 travel mm : 8.10...8.30

5th speed rpm : 1400
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1300

Del.quantity : 197.0...199.0
1000 : (195.0...201.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 10.80
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 77...85

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 300...370

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 240
Rack travel in m: 7.60...7.70
3rd pressure hPa : 920
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 113.0...115.0
1000 s: (110.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.30...4.50

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 f
 Edition : 11.03.93
 Replaces : 22.01.92
 Test oil : ISO-4113
 Combination no. : 0 403 246 030
 Injection pump
 Pump designation : PES6MW100/720RS1511
 EP type number : 0 413 206 011
 Governor
 Governor design. : RQ300/1300MW105-9
 Governor no. : 0 420 082 061

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM366LA

1st version kw : 177.0
 Rated speed : 2600
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 13.0...13.2
 100 s: (12.8...13.6)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.2...4.4
 Del. quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 1000
 Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 1200
 Del. quantity : 130.0...132.0
 1000 : (128.0...136.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 1000
 Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.40
 Speed rpm : 1345...1360
 2nd rack travel in: 4.00
 Speed rpm : 1445...1475
 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 4.3

Testing:

Speed rpm : 200

Minimum rack travel: 6.00

Speed rpm : 300

Rack travel in mm : 4.20...4.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 7.80...7.90

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 8.50...8.70

2nd pressure hPa : 600

Rack travel in m: 10.60...10.80

3rd pressure hPa : 1200

Rack travel in m: 13.40...13.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 750

Del.quantity cm³/ : 122.5...125.5

1000 s: (120.0...128.0)

Spread cm³ : 5.00

1000 s: (7.00)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 46.0...48.0

1000 s: (44.0...50.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1345...1360

M26

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 115.0...125.0

1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.20...4.40

Del.quantity cm³/ : 10.0...14.0

1000 s: (7.5...16.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449AC
 Injection pump
 Pump designation : PES6A1000320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3352893-VERSA002

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 l

1st version kW : 134.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

 Rack travel in mm : 10.20...10.30

 Del.quantity cm³/ : 8.7...8.9
 100 s: (8.5...9.1)

 Spread cm³ : 0.3
 100 s: (0.6)

 2nd speed rpm : 400.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 0.9...1.3
 100 s: (0.7...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 87.5...89.5
 1000 : (85.5...91.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:
1st rack travel in: 9.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.5

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 12.10...12.30
3rd speed rpm : 750
Rack travel in m: 12.10...12.30
4th speed rpm : 950
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 101.0...104.0
1000 s: (98.5...106.5)
Speed rpm : 750
Del.quantity cm³/ : 115.0...118.0
1000 s: (112.5...120.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449CA
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201

Cust. part no. : 3915294-VERSA020

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA 8.3 L

1st version kW : 164.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del. quantity cm³/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:
1st rack travel in: 10.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.50...11.60
2nd speed rpm : 500
Rack travel in m: 12.20...12.40
3rd speed rpm : 750
Rack travel in m: 12.20...12.40
4th speed rpm : 950
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 102.5...105.5
1000 s: (100.0...108.0)
Speed rpm : 750
Del.quantity cm³/ : 119.0...122.0
1000 s: (116.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 450AJ
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV375...1150A2C2210
 R
 Governor no. : 9 420 083 202

Cust. part no. : 3353250-VERSAC09

Customer-spec. information
 Customer : CUMMINS

Engine : 6 C 8.3 L

1st version kW : 120.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:

1st rack travel in: 9.70
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1335...1365
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.80...12.00
3rd speed rpm : 600
Rack travel in m: 11.80...12.00
4th speed rpm : 900
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 100.5...103.5
1000 s: (98.5...105.5)
Speed rpm : 900
Del.quantity cm³/ : 99.5...102.5
1000 s: (97.0...105.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 083 452DH

Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...1250AB1225R
 Governor no. : 9 420 080 224

Cust. part no. : 3355244-VERSA037

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 157.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.50...11.60

Del. quantity cm³/ : 10.8...11.0
 100 s: (10.6...11.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del. quantity cm³/ : 1.2...1.6
 100 s: (1.0...1.9)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1265
 travel mm : 8.40...8.60
 2nd speed rpm : 900
 travel mm : 5.50...6.00
 3rd speed rpm : 500
 travel mm : 3.70...4.20
 4th speed rpm : 350
 travel mm : 1.80...2.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1250
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity cm3/ : 108.0...110.0
1000 : (106.0...112.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 10.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.80
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 11.50...11.60
2nd speed rpm : 500
Rack travel in m: 12.10...12.20
3rd speed rpm : 750
Rack travel in m: 12.10...12.20
4th speed rpm : 900
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 105.0...108.0
1000 s: (102.5...110.5)

Speed rpm : 750
Del.quantity cm3/ : 115.0...118.0
1000 s: (112.5...120.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.0...186.0
1000 s: (151.0...191.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 12.5...16.5
1000 s: (10.0...19.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 x
 Edition : 11.01.93
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 9 400 083 459
 Injection pump
 Pump designation : PES6A95D12ORS2822
 EP type number : 9 400 084 029
 Governor
 Governor design. : RQV350...1250AB1235-
 2R
 Governor no. : 9 420 080 311

Customer-spec. information
 Customer : CUMMINS

Engine : 6 BT

1st version kW : 119.3
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00x2.00x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1250

 Rack travel in mm : 12.70...12.80

 Del. quantity cm³/ : 8.6...8.8
 100 s: (8.4...9.0)

 Spread cm³ : 0.3
 100 s: (0.6)

 2nd speed rpm : 350.0
 Rack travel in mm : 5.0...5.2
 Del. quantity cm³/ : 0.6...1.0
 100 s: (0.4...1.2)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300
 travel mm : 6.80...6.90
 2nd speed rpm : 350
 travel mm : 1.20...1.70
 3rd speed rpm : 700
 travel mm : 4.00...4.50
 4th speed rpm : 1550
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1530
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h: 600
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:

1st rack travel in: 11.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 475...575

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 320
Rack travel in m: 11.70...11.80
3rd pressure hPa : 410
Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 700
Del.quantity cm3/ : 80.0...83.0
1000 s: (77.5...85.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...67.0
1000 s: (62.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...135.0
1000 s: (110.0...140.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: C.D.C # 3355264

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 05.03.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 241
 Injection pump
 Pump designation : PES3A90D320RS2703
 EP type number : 9 400 083 096
 Governor
 Governor design. : RSV350...1150A2C2129
 -4R
 Governor no. : 9 420 083 268

Customer-spec. information
 Customer : MWM

Engine : D 229-3

1st version kW : 42.7
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 003
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
 : (2.60...2.80)

NO9

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 3

Phasing : 0-120-240
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 8.50...8.60
 Del. quantity cm³/ : 5.8...5.9
 100 s: (5.6...6.1)
 Spread cm³ : 0.3
 100 s: (0.5)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.5...5.7
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.9...1.7)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 58.0...59.0
 1000 : (56.0...61.0)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 93...101

Testing:

1st rack travel in: 7.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.50...8.60
2nd speed rpm : 500
Rack travel in m: 9.40...9.50
4th speed rpm : 800
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 54.0...56.0
1000 s: (51.5...58.5)
Speed rpm : 800
Del. quantity cm³/ : 60.5...62.5
1000 s: (58.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 05.03.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 085 272

Injection pump
 Pump designation : PES4A90D32ORS2744
 EP type number : 9 400 084 012
 Governor
 Governor design. : RSV350...1300A2C2215
 -2R
 Governor no. : 9 420 083 275

Customer-spec. information
 Customer : MWM

Engine : TD 229-4

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del. quantity cm³/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300

Del. quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 105...113

Testing:

1st rack travel in: 9.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1600
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/cut bumper spring
Speed rpm : 350
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.60...10.70
2nd speed rpm : 500
Rack travel in m: 11.20...11.30
3rd speed rpm : 800
Rack travel in m: 10.90...11.20
4th speed rpm : 900
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Speed rpm : 900
Del.quantity cm³/ : 89.0...91.0
1000 s: (86.5...93.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

N12

Speed rpm : 350
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 05.03.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 332
 Injection pump
 Pump designation : PES6A90D32ORS2727
 EP type number : 9 400 084 007
 Governor
 Governor design. : RSV350...1200A2C2097
 R
 Governor no. : 9 420 083 279

Customer-spec. information
 Customer : MWM

Engine : D 229 EC 6

1st version kW : 90.8
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.10...9.20

Del.quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 59.5...60.5

1000 : (57.5...62.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 90...98

Testing:

1st rack travel in: 8.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.10...9.20
2nd speed rpm : 500
Rack travel in m: 10.10...10.20
3rd speed rpm : 800
Rack travel in m: 9.70...9.90
4th speed rpm : 1000
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 55.5...57.5
1000 s: (53.0...60.0)
Speed rpm : 800
Del.quantity cm³/ : 62.0...64.0
1000 s: (59.5...66.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 26.02.93
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 9 400 085 349
 Injection pump
 Pump designation : PES6A95D410RS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RQV350...1250AB1260
 -1L
 Governor no. : 9 420 080 330

Customer-spec. information
 Customer : MWM

Engine : 6.10 T

1st version kw : 129.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 9.1...9.3
 100 s: (8.9...9.5)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del. quantity cm³/ : 0.7...1.1
 100 s: (0.6...1.3)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.10...7.30
 2nd speed rpm : 300
 travel mm : 0.80...1.30
 3rd speed rpm : 550
 travel mm : 2.50...3.00
 4th speed rpm : 800
 travel mm : 3.70...4.20
 5th speed rpm : 1500
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1490
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 800
Del. quantity : 91.5...93.5
1000 : (89.5...95.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.70
Speed rpm : 1300...1310
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1630
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 325...475

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 750
Rack travel in m: 12.10...12.20
3rd speed rpm : 900
Rack travel in m: 12.10...12.20
4th speed rpm : 1050
Rack travel in m: 11.90...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 500

N16

1st pressure hPa : -
Rack travel in m: 11.10...11.30
2nd pressure hPa : 380
Rack travel in m: 11.30...11.40
3rd pressure hPa : 480
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 750
Del. quantity cm³/ : 91.0...94.0
1000 s: (89.0...96.0)
Aneroid pressure h: 800
Speed rpm : 900
Del. quantity cm³/ : 94.5...97.5
1000 s: (92.5...99.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 72.0...74.0
1000 s: (70.0...76.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1300...1310

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del. quantity cm³/ : 7.5...11.5
1000 s: (6.0...13.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 387
 Injection pump
 Pump designation : PES5P120A72DLS7174
 -10
 EP type number : 0 412 725 815
 Governor
 Governor design. : RG300/1050PA774-2
 Governor no. : 0 421 801 450

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kW : 184.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 14.40...14.60
2nd speed rpm : 750
Rack travel in m: 14.90...15.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 12.20...12.40
2nd pressure hPa : 400
Rack travel in m: 13.50...13.70
3rd pressure hPa : 750
Rack travel in m: 14.20...14.30
4th pressure hPa : 850
Rack travel in m: 14.60...14.80
5th pressure hPa : -
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

N18

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 390
 Injection pump
 Pump designation : PES6P120A720LS7114
 -13
 EP type number : 0 412 726 867
 Governor
 Governor design. : RQ300/1050PA911
 Governor no. : 0 421 801 476

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 257.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0
Speed rpm : 300
Rack travel in mm : 5.80...6.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 13.60...13.80
3rd speed rpm : 700
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 11.20...11.40
2nd pressure hPa : 600
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80
4th pressure hPa : 1100
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

N20

Del.quantity cm³/ : 229.0...233.0
1000 s: (226.0...236.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 244.0...247.0
1000 s: (241.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5.0 B
Edition : 16.03.93
replaces : 20.07.87
Calibrating oil : ISO-4113
Injection pump : VE4/11F1500R266-1
Type number : 0 460 414 042
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : MARINE NA 3000

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): +0.02(0.04)

Indicator setting
Piston stroke mm: 1.47
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.40...2.80

Supply-pump pressure

N21

Speed 1/min: 1100
Setting value bar: 4.90...5.50

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 23.00...24.00
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 11.00...15.00
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm3/
1000S.: 12.00...18.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.70...4.50
mm: (3.40...4.80)
3rd speed 1/min: 1100
TD travel mm: 2.40...2.80
mm: (1.90...3.30)
4th speed 1/min: 700
TD travel mm: 0.40...1.20
mm: (0.10...1.50)
5th speed 1/min: 1350
TD travel mm: 3.40...4.20
mm: (3.10...4.50)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump
pressure bar: 3.50...4.10
2nd speed 1/min: 1100
Supply-pump
pressure bar: 4.90...5.50
3rd speed 1/min: 1500

Supply-pump
pressure bar: 6.40...7.00

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1500
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1650
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
5th speed 1/min: 1600
Del. quantity cm³/1000s.: 12.00...18.00
(10.00...20.00)
9th speed 1/min: 1500
Del. quantity cm³/1000s.: 47.00...50.00
(45.50...51.50)
10th speed 1/min: 1100
Del. quantity cm³/1000s.: 47.50...50.50
(46.00...52.00)
12th speed 1/min: 600
Del. quantity cm³/1000s.: 23.00...24.00
(21.00...26.00)

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 1500
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/1000s.: 11.00...15.00
(9.00...17.00)

Dispersion cm³/1000s.: 3.0
(3.0)

2nd speed 1/min: 400
Del. quantity cm³/1000s.: 3.00...9.00
(1.50...10.50)

3rd speed 1/min: 460

Del. quantity cm³/1000s.: 0.00...5.00
(0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/1000s.: 36.00...52.00
(14.00...30.00)

2nd speed 1/min: 400
Del. quantity cm³/1000s.: 24.50...39.50
(MAX.39.5)

4th speed 1/min: 100
Del. quantity cm³/1000s.: 70.00...100.00
(MIN.70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
MS1 mm: 1.60
SVS max. mm: 3.8

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 15.03.93
replaces : 02.07.92
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R342
Type number : 0 460 414 067
Customer Part-No. :

Customer-specific information
Customer : S0FIM

Engine : 8140.07.2700

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): (+0.02(0.04))

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 525
Del. quantity cm³/
1000S.: 27.00...28.00 F

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 54.00...55.00 E

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 10.50...14.50

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2300
Del. quantity cm³/
1000S.: 18.00...22.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...80.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: -13.3...15.3 #
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1100
Supply pump
pressure
difference bar: -0.10...0.30#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 4.10...4.90
mm: (3.90...5.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 3.10...3.50
mm: (2.70...3.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.60...1.40
mm: (0.40...1.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.10...4.70
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1100
Supply-pump
pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1500
Supply-pump
pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 525
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 69.50...111.20
(55.50...125.20)

2nd speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 83.40...180.70
(69.40...194.70)

N24

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...5.00

5th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 18.00...22.00
(15.50...24.50)

8th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 32.00...40.00
(30.00...42.00)

9th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 48.00...53.00
(47.00...54.00) D

10th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 53.20...58.20
(52.20...59.20)

12th speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 27.00...28.00
(24.00...31.00) F

18th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 54.00...55.00
(51.00...58.00) E

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/1000s.: 0.00...3.00
1000s.: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 10.50...14.50
(8.50...16.50)

Dispersion cm³/1000s.: 3.0
(3.5)
2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...2.00
1000S.: -
3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: -
5th speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...36.00
1000S.: (25.00...37.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1100
Inj.-qty. cm³/: -16.5..24.5 *
difference 1000S.: -
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1100
Inj.-qty. cm³/: MAX. ..8.00 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1100
TD-travel : -0.40..0.60 *
difference mm: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD-travel : -0.0...0.80 "
difference mm: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...60.00
1000S.: (40.00...60.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...40.00
1000S.: (10.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: K-OT
MS mm: 0,0...1,2
SVS max. mm: 3,5
HBA stroke mm: 7,2

Remarks:

:
:
F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery